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SWEDEN'S ECONOMIC PROGRESS

With an Introduction by

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INTRODUCTION

At a time when the entire world is embroiled in war or the disorder attendant upon war, every man strives to find an anchorage. He searches for standards of eternal validity and tries to discover ways and means of realizing his ideals. In America, as in all free countries, such search for permanent values will always be one of man's most engrossing and solemn preoccupations. Most of us would undoubtedly agree that the goals of human endeavor should include: universal peace among nations; domestic order and tranquillity; a definite area of free speech, free assembly, free exercise of religion; social security; unbiased courts to settle disputes among men; harmonious relations in the economic order; and an efficient administration of government.

Differences of opinion in regard to the proper methods and procedures for the attainment of the ends agreed upon are considered necessary and inevitable in normal times. But these are not normal times. These are times of crisis and the time factor is of pressing importance. If we are to preserve the gains already made and to continue on the path already marked out, we must act quickly and yet wisely.

It is my belief that the essays in this volume will assist us in the task of choosing the methods best adapted to the attainment of the aims indicated above. In a companion volume certain Swedish writers have told the story of Sweden's social institutions. Extraordinary progress has been made in the solution of the problems of public health, care of the handicapped, unemployment, adult education, and human shelter. But none of these ends could have been achieved unless equal progress had also been made in the fields of government and economics.

Since it is essential to the national welfare that all parts of the national program be integrated with each other and be informed with the same spirit of cooperation, it has seemed appropriate to those who planned this volume to present in it some aspects of the story of Swedish economic and political progress, as an accompaniment to the description and analysis of her social institutions. Here, then, we may learn of the methods used in Sweden to conserve her forest resources, manage her steel production, organize her agricultural life, provide for a rational system of retail distribution, preserve industrial peace, and fit the national budget to the economic and social needs of the people.

Originally prepared for The Royal Swedish Commission to the New York World's Fair in 1939, these essays do not reveal the measures taken by Sweden, since the new World War began, to protect herself from foreign aggression and to safeguard her independence. To some extent Sweden has been spared, thanks partly to her physical isolation and partly to other considerations over which she has had no control. But, it needs to be emphasized, Sweden is still independent, neutral, strongly prepared, and fully determined not to allow herself to be deprived of her rights by foreign powers. She has sacrificed no important democratic principle and she has demonstrated that a free people, by disciplining themselves, can maintain their free institutions in the face of the most powerful threats to national security.

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Bloomington, Indiana
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FOREWORD

As explained in the Foreword to "Social Welfare in Sweden," a companion volume to this, The Royal Swedish Commission to the New York World's Fair, 1939, decided to tell the story of Sweden's progress in words as well as in displays. A series of booklets, each one dealing with a special topic, was therefore projected. With the original publisher's permission some of the articles written by Swedish experts for the May, 1938, issue of "The Annals of The American Academy of Political and Social Science" were reprinted and, with some exceptions and one addition, they are now grouped for library use in a separate volume under the title of "Social Welfare."

The members of the Commission also felt that the main sources of Swedish wealth, without which no social welfare measures would have been possible, should also be explained and as those topics had fallen outside the scope of the special Sweden issue of "The Annals" new texts were provided. These sources are, in brief, the forests, the arable soil and the mines, all difficult to exploit, but nevertheless bountiful, once their secrets have been mastered. It is on these primary materials that Sweden's principal foreign trade has been based and from these same materials the Swedish engineers, inventors and technicians have been able to obtain many of the substitute products which now sustain the Swedish people in their isolation behind the double blockade. If before this war is over the United States should run short of some of its customary raw materials, it may discover useful experience in Sweden. On the burning issue of labor relations the United States may also find light in Sweden. The first booklet in this volume, that by the late

Sigfrid Hansson, brother of the Prime Minister and at the time of his death Director of the Social Welfare Board of the Government, explains the fundamental reason why Sweden in recent years has been spared the curse of strikes.

The Royal Commission is grateful to Professor Peel for his Introduction. As a member of the field staff of the Institute of Public Administration he recently spent two years in Sweden for special research work and thus had an opportunity to observe at first hand the Swedish system at work.

NABOTH HEDIN
Chairman, Committee on Publications

New York
June, 1941

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EMPLOYERS AND WORKERS IN SWEDEN

by

Sigfrid Hansson

Published by The Royal Swedish Commission — New York World's Fair 1939

Employers and workers in Sweden

Sigfrid Hansson has been director general of the Social Board since 1937. He has been a member of the Senate since 1919, and has served on several different committees and commissions. He was editor of the journal "Fackföreningsrörelsen" (main publication of The Confederation of Swedish Trade Unions) for many years, and has published several articles on the labor movement.

Introduction

In few countries have employers and workers managed to create so wide-spread, stable and influential organizations as in Sweden. Perhaps it had better be left unsaid, how much this depends on a specially developed ability for organizing and a stronger feeling of belonging together that the Swedish people are assumed to possess. A keen and critical observer, leader for the great emigration investigation of the beginning of the century, Professor Gustav S. Sundbärg, has, however, found it possible to state that a highly developed organization ability is a characteristic trait of Swedish people. "If", he says, "anyone doubts the Swedish organizing ability, then let us consider the past and remind ourselves of the creation of the model Swedish administration of government earlier than in any other country. In our days, the same phenomenon has been exhibited, in greatest degree, in the social welfare sphere. In spite of the fact that our people are so little advanced industrially[1], the Swedish social democracy is said

[1] This remark refers to the beginning of the twentieth century.

to be the best organized to be found. The same thing can also be said about the Swedish employers' associa-ions."[2]

As far as social organization is concerned, harmony and solidarity should be considered as integrated with the capacity for organization. And an expression of them is to be found in the personal willingness to sacrifice and the willingness to subordinate individual interests to the common interest. These moral traits are as characteristic of the Swedish employers as of the workers and have truly, in great degree, conferred upon the organizations in both camps their permanence and strength.

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[2] Gustav Sundbürg: Det svenska folklynnet. Aforismer. Emigrationsutredningen. Appendix XVI, pp. 68—69. Stockholm, 1911.

§ 1. Bases for the Development of the System of Organization

Both the trade unions and the employers' organizations are in Sweden the product of recent times. The structural, social and economic bases for their existence were created relatively late. The trade union movement traces its origin back to the latter part of the 1870's, and the modern employers' organization has been in existence only about four decades.

When the first trade unions were formed, the Swedish people were still, to a great degree, an agricultural people. Not quite one fifth of the population at this time made their living in industry and mining. The number of factory workers was estimated to be only a little more than 50,000 and within the trades only 30,000 workers, in round numbers, were engaged. But the industrial revolution, aided and encouraged by free competition, soon created favourable conditions for a modern system of organization. The employers delayed as long as possible with their initial plans in this regard. They retained in part their old, patriarchal ideas and were as unwilling to give up some of their independ-

ence to their own equals as to let go of their traditional rule over the laborers.

Therefore, when the latter began to organize and to make demands for a share in deciding on conditions of labor, sharp opposition resulted. Many employers could not reconcile themselves to the thought that their workers should be allowed to make their wishes and demands effective through joint action. They quite simply forbade their workers to organize themselves in trade unions, and when the refusal was defied, they resorted to discharging workers, to ejection of workers from houses allotted to them, and to all other types of annoyances.

§ 2. The Struggle for the Right of Association

The right of association became a dangerous explosive in Swedish society. Workers took great risks and contributed heavy personal sacrifices in the struggle for this civic freedom and right. Among the employers were found some, who in entire seriousness indicated that they, through regard for their employees' welfare, were obliged to try to prevent them from yielding to the trade unions and as a consequence to the power of a social movement destructive to society.

The conflicts for the right of association culminated in the end of the 1890's. The employers got the upper hand. The workers were defeated, but rose soon again,

encouraged and supported by a public opinion that had reacted powerfully against the infringement of rights. The temporary victory of the employers, to cite a historian[3] of the Swedish Employers' Federation, closely resembled a Pyrrhic victory. In this degree it taught a lesson and helped to convince the employers that it would in the future be wise to respect the right of association and for their own part to make use of the same right in order to erect their own organization against the workers.

Since that time there has certainly been no lack of conflicts concerning the right of association on the Swedish labor market, but they have become more and more unusual and are looked upon as anachronisms from a period long since past. The right of association has for more than three decades been acknowledged de facto in Swedish democratic society as one of its foundation pillars. De jure, the acknowledgement was made first in collective agreements and later also in law.[4] With the acknowledgment of the right of association as a self-evident consequence there has followed an acknowledgement of the right of negotiation and this in its turn has led to the more widespread use of the regulation of conditions of labor by collective agreements between employers or their organizations and trade unions (local trade unions and trade-union federations).

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[3] Carl Hallendorf: Svenska arbetsgivareföreningen 1902—1907, p. 17. Stockholm, 1927.

[4] Law on the right of association and negotiation of September 11, 1936.

§ 3. Organization of the Workers and of Salaried Employers

The development and consolidation of the Swedish trade union movement was in high degree aided by the unity in race, language and religion, that characterizes the Swedish people. In the case of political view points, the Swedish labor movement has also been, on the whole, in agreement. The political oppositions have in any case not been of enough importance to threaten at all seriously the unity of the labor movement. Attempts to win the workers for revolutionary-syndicalist and anarchic-socialist ideas have been about as unprofitable as the efforts to convert them to join the communistic or half-communistic parties[5].

The combination of local trade unions in national unions (so-called trade-union federations) began toward the close of the 1880's and continued in rapid tempo throughout the following decade. Then it was principally workers trained for the crafts, who organized, with the result that the old craft divisions became in the main the organization divisions. In 1898 the *Swedish*

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[5] The Syndicalist organization that was founded in 1910 on French and American models. (I. W. W.) has only approximately 30,000 members, and the Communist groups have maintained themselves at about the same level. The Swedish Communistic party (section of the Communist International), reported as ist membership, October 1, 1938, 20,195. The Socialistic party, (formerly Leninistic, now Trotzkyist) was said at the same time to have had 15,200 members. In comparison, it should be mentioned that of the Social Democratic party's 400,000 members, about three-fourths are trade union members. (See further: Sigfrid Hansson: **Arbetarrörelsen i Sverige,** 5th edition, Stockholm, 1938).

Confederation of Trade Unions[6] was organized as a federation or organization of the trade-union federations. Its task was essentially to support the trade unions and trade-union federations during so-called *defense fonflicts,* i.e. conflicts over the right of association, and over lock-outs put into effect by employers and employers' organizations. Gradually, as industrial development continued, it became more and more necessary to reorganize the trade federations from craft- and trade-unions to industrial unions. The industrially organized employers' associations and consequently as a result, the more and more centralized negotiations concerning agreements also helped to bring about such a reform. Although in the beginning the reform ran into rather strong opposition on the part of the craft-trained workers, gradually it has been adopted so that about 75 % of all the workers organized in the confederation are now organized in consonance with the principle of industrial unionism.

It was not only among the employers that the trade unions in the beginning were greeted with mistrust and

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[6] Translator's note: the question of nomenclature is a little confusing. Following American labor terms, it is quite possible to call the »trade-union federation» a national union, and the »Confederation of Trade-Unions» the Swedish Federation of Labor. The term for coercive measures, **stridsåtgärder,** has been variously translated as direct actions, hostile actions, and coercive measures. The translation of paragraph 23 of the constitution of the Swedish Employers' Federation and of paragraph 7 of the constitution of the Swedish Confederation of Trade-Unions has been secured from the report of the United States Department of Labor on Industrial Relations in Sweden. The translation of the Basic Agreement given in the Appendix was supplied by the Swedish Employers' Federation. — Ebba Dalin, translator.

antipathy. Even among workers opposition arose that was not easy to overcome. The religiously minded workers were in general either inimical in their attitude toward an association with socialistic tendencies, or else they remained critically expectant. This psychological opposition gave way gradually, however, and by 1907—1908, the number of trade-union members had increased to 200,000. The general strike of 1909 and the lock-outs in connection with it resulted in the failure of many unions, and large groups of members were dispersed. Then came the World War and the resulting difficult economic crisis, all little designed to encourage the growth and development of the labor organizations. At the close of the war, the number of members in trade unions, however, had increased, approximately, to 300,000. Since that time a tremendous increase has taken place, in spite of the extensive unemployment that has periodically occurred and whose similar occurrence in other countries almost without exception has caused serious losses of membership in trade unions.

In 1938 the membership in Swedish trade unions[7] was calculated to be about one million. Of this number 890,000 were affiliated with the Confederation of Trade Unions, which consisted of 42 trade-union federations, which together consisted of 7,350 local trade unions.

Only a few trade-union federations are outside this

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[7] In the term »trade union members» has been included all types of employees who have organized in interest or pressure groups, even those who do not themselves use the term, as for example, some groups of non-manual workers.

central organization, for example, the locomotive engineers, and the customs officials. In addition, there are the syndicalists and certain unions and associations that consist of non-manual or white-collar workers, i.e. the professional-technical-clerical personnel with positions as officers and assistants in public or private service. (These salaried employees are in Swedish referred to simply as "the employed".)

The salaried employees have their own national organizations (i.e. corresponding to the Confederation of Trade Unions). Their central organization (called Daco) thus includes engineers, foremen, ship officers, bank personnel, office workers, clerks, etc., employed in private service. This organization was founded in 1931 and now has 50,000 members. An organization corresponding to Daco is the *Civil Service Employees' Central Organization* (TCO), which counts 40,000 members among elementary school teachers, policemen and certain other employees in the service of communities. Even the government civil service workers are organized in associations that try to promote the wage interests of their members.

§ 4. The Employers' Organizations

The Swedish employers' organizations are in general more recent than the corresponding combinations on the workers' part. Neither do they, as a rule, cover as much territory as the latter. The consolidation in the Swedish Employers' Federation, which corresponds to the Fede-

ration of Labor, concerns mainly industry proper. Agriculture, the greater portion of handicrafts, commerce and communication are represented by independent employers' organizations.

The Swedish Employers' Federation was formed in 1902. It consists, like the Confederation of Trade Unions, of associations representing different crafts and industries, for example the book-binding trade, the building trade, the iron works industry, the paper pulp industry, the textile industry, the mechanical shop industry, mining, the glass industry etc. In 1938 these associations were nearly 40 in number. Together they had 5,100 members, who employed 400,000 workers.

Aside from the Swedish Employers' Federation, there exist several associations and federations. Among them may be mentioned the *Swedish Ship Owners' Association* with about 170 members, employing around 12,000 workers and officers, also the *Swedish Agricultural Employers' Association,* with which about 2,550 employers are affiliated, employing, in round numbers, some 30,000 workers.

The three organizations named above cooperate and for that purpose have created the *Swedish Employers Associations' Advisory Council*[8]. The Swedish Employers' Federation has also organized cooperation with the rather new employers' organization in commerce, the *Merchants' Guarantee Association.*

In addition special mention should be made of the *Swedish Railroad Employers' Association,* that com-

prises some 80 railroads under private ownership with about 20,000 employed.

The *Newspaper Employers' Association* representing 141 newspapers with 5,700 employed, also stands outside of the Swedish Employers' Federation. This condition also exists for the employers' organizations within the hotel and restaurant branches and within the handicrafts.

A number of the larger municipalities have formed an organization, whose purpose is to give aid in connection with negotiations concerning collective agreements and related problems. This association is not an employers' association in the usual meaning, however. It has therefore not been acknowledged to possess any disciplinary capacity toward the municipalities attached to it and neither does it grant damages for a strike. Some 60 municipalities are members and have about 22,500 persons in their employ.

§ 5. Partial Description of Character

In the introduction mention has already been made of the comparatively great extension of the Swedish employers' and workers' associations and—if one may express oneself in this fashion—their physical strength, by which is meant their stability, homogeneity and material resources. The last characteristic stands, especially as far as the workers' organizations are concerned, naturally in direct relation to the members' willingness to sacrifice and to make economic contributions. The wil-

lingness to make economic and other sacrifices for the common good in the trade unions is undoubtedly equally well developed among practically all members, without regard to the trade or occupation to which they belong. It is in the Swedish workers' soul that one should belong to the trade union and to pay without complaint the dues that are found necessary for the relief activity, in which solidarity must be anchored. Naturally it can happen that this strong feeling for the union is based, for many individuals—perhaps the majority—on a self-ish speculation concerning wage policy and in a desire to gain security against the risks of unemployment due to labor conflicts or to lack of work.

If it can be said then, that the willingness to sacrifice is equally great with all, it must on the other hand be stated that in regard to *ability* there exists an important difference between different labor groups. It is obvious that the agricultural laborers and the women workers as a whole, for example, have smaller resources to call upon than, for example, the building workers and the typographical workers. The union dues must therefore vary quite a good deal and from this it follows that the different trade unions are very differently prepared, from an economic point of view. While the dues in the agricultural workers' union for 1938 amounted only to Kr. 30.—, the amount for the typographical union was about Kr. 145.—. On December 1937, the net worth in the agricultural labor union was Kr. 29.68 per member; in the typographical union it was not less

than Kr. 542.69 per member. The Confederation of Trade Unions and its affiliated member unions owned together, in round numbers, 125 million Kronor, a very large fortune estimated according to Swedish conditions.

The so-called white-collar workers' unions have not in the same degree as the other unions placed weight on the aim of creating a relief activity for strikes and lock-outs. The dues are therefore comparatively modest. Several of these unions do not on the whole count on having to meet situations when it would become necessary to give their members economic support because of disagreements with employers.

Equally comparable information concerning employers' organizations cannot be given. In these associations the membership dues dot not have the same significance as in labor organizations. The basis for the amount of dues that the employers pay to the Swedish Employers' Federation is the number of the workers employed in that branch of the activity for which the membership in the organization applies. Dues are Kr. 20.— per year for each adult male worker and for women and workers under 18 years of age, the dues are Kr. 10.— per year. These payments include the insurance premium for strikes and lock-outs, which are compulsory with membership in the association. To the extent that the means that come in as dues are not used for administrative costs, they are transferred to a fund, out of which indemnity is paid for strikes and lock-outs according to

the above mentioned rules. The size of the fund went up in 1938 to 25 million Kronor in round numbers. Members are in addition responsible for leaving security with the federation for the fulfilment of their obligations under the by-laws; this is done by giving written guaranties for a sum, the amount of which is based on the number of workers, usually Kr. 200.— for each adult male worker and Kr. 100.— for each woman worker and for each worker under 18 years of age.

A characteristic that is common to both the workers' organizations and to the employers' associations is their marked sense of method, order and system. They make a serious effort to prepare thoroughly whatever they intend to undertake. Improvisations are unusual. Seldom has it happened that strikes or lock-outs have been entered upon in desperation. The careful preparation and the self-conscious planning are undoubtedly suitable for the encouragement of attempts at peaceful settlement. But if the parties do not succeed in reaching positive results through negotiations, they then rely upon the excellent harmony among the members and upon the organization's economic resources. Therefore, they take the conflict equably and after it has begun, it often takes a long time to bring it to a conclusion again.

With the growth and development of the system of organization, the parties both independently and in cooperation have more and more made efforts to avoid strikes and lock-outs. This has happened in their own

well-understood interests but also, undoubtedly, with consideration for the common good. In order, if possible, to prevent the giving of notice for the termination of collective agreements and with the therewith connected risks for labor peace, it has become more usual that the parties engage in preliminary negotiations with each other, through which attempts are made, often with good results, to adjust, supplement and prolong the agreements. It has also been possible many times in this way to give new contents to the agreements.

§ 6. Duties of the Leadership

The last mentioned characteristic and the implied development connected with the relations between the organizations should be seen in the light of the *centralisation* of leadership and of administration that has been effected.

In this case there is a certain difference between the Confederation of Trade Unions and the great, leading Employers' Federation. The Board of Directors of the latter and the Committee of Delegates, respectively, when the adoption of coercive measures and the ending of collective agreements are concerned, have been armed with more far-reaching powers than the secretariat and general council respectively of the Confederation of Trade Unions. The difference, however, has with the years, become more formal than real in nature.

If a strike is threatened or has broken out in some enterprise, that is attached to the Swedish Employers'

Federation, the enterprise should immediately give notice of it to the Federations' board, which is obliged to give the employer all the help that can be required to end the conflict. If such an enterprise wishes to effect a lock-out against its workers, then this decision must be reported to the board of that trade or local organization through which the enterprise is joined with the association. The board of the organization sends the notice to the board of the Employers' Federation, which in its turn decides, whether or not the lock-out may be adopted with the Federation's support. The same condition holds good, if an trade or local organization joined to the Federation wishes to take some coercive action. If the Federation's board refuses its consent to a lock-out, the question can be referred to the Federation's delegates, where the decision for lock-out may be made with 2/3 majority vote.

Especial interest is offered by the following regulations in the by-laws of the Swedish Employer's Federation (§ 23):

"Should an associate or member of the Federation wish to enter into a collective agreement with a trade-union, trade-union federation, or other labor organization, the draft agreement shall be submitted to the board of the Federation and no such agreement shall be concluded without the approval of the board. The board may also, after consulting the trade or local association concerned, issue instructions regarding the application of a collective agreement, as well as regarding working conditions not regulated by such an agreement.

A collective agreement entered into by an associate

or a member of the Federation and a trade union or a trade-union federation shall include a stipulation to the effect that the employer shall have the right to engage and dismiss workers at his own discretion, to lead and allot work, and to employ workers belonging to any labor union or unorganized workers.

An employer who in any capacity has joined the Federation shall be forbidden during a strike or lock-out against the decision of the board, to provide work directly or indirectly for workers who are on strike or who are locked-out or otherwise involved in the conflict or to support them in any other way; and it shall rest with the board to take the necessary steps for rendering possible compliance with these regulations.

Any associate offending or evading any of the stipulations contained in this section, or any special instructions issued on the strength thereof, shall be held liable for damages, if his offense may be deemed to have been intentional."

To the provisions in the 2nd section of the paragraph we will return later.

Within the trade union movement, the center of gravity has rested on the trade-union federation as far as wage movements and strikes are concerned. The Confederation of Trade Unions plays, as before mentioned, the rôle of a reinsurance institute with regard to the so-called defence conflicts, that is to say, lock-outs and strikes, that are taken in order to prevent attacks on the right of association, and attempts to reduce wages. Formally then, the responsibility which the Confederation's leadership has toward the trade-union federations' wage movements and labor conflicts is considerably limited. The centralisation in the trade union move-

ment has consequently found the strongest expression in the trade-union federations.

According to the by-laws in effect for the majority of them and the usage that has developed, their boards have in the final analysis the right of decision on wage movements, strikes and other coercive measures as well as on collective agreements. The initiative for the adoption of or giving notice for such agreements, or for the regulation of labor conditions in other ways can be taken either by the board of the trade-union federation concerned directly or by having 2/3 of the members make a decision through secret ballot and by having the board give its approval thereto. The board of the trade-union federation can call a conference together concerning questions, that involve wage movements and negotiations on collective agreements, but the decisions of such a conference are looked upon as "only of advisory character". If the negotiations do not lead to acceptable results on the part of labor and the question of starting a strike arises, the question must be made the subject for a secret vote among the trade union members that are affected by the controversy. In case the results of the vote are such that 2/3 of the members voted in favor of a strike, the matter is referred to the trade-union federation's board, "which decides if and when such action shall be taken".

The board of the trade-union federation has the right on its own initiative to impose the stoppage of work and the union members are obliged to accept the deci-

sion. Notice of blockade and of boycott may not be issued, unless the proper trade federation board has given its approval. If blockade or boycott is to cover the sphere of activity of two or more trade-union federations, it is assumed that the boards of these federations have agreed on the action beforehand. If disagreement should arise between the federation boards concerning such a coercive measure, the controversy should be decided by the secretariat of the Confederation of Trade Unions.

Proposals for settlement in labor disputes, proposals regarding collective agreements and similar matters shall "be submitted to the consideration of the members that are involved", for example through vote taken by them, but the definitive decision is reserved to the board of the trade-union federation, finally to the secretariat or general council of the Confederation of Trade Unions in case the Confederation as such is involved in the conflict or the negotiations concerning agreements.

§ 7. Trade Union Democracy

Opinions on this centralisation of the system of organization have been divided both between employers and workers. Many an employer in the beginning must have found it difficult to reconcile himself to the limitations in his personal freedom of action that membership in an interest organization inevitably involves. For the workers, the problem has been somewhat different. They have in general not reacted against the compul-

sion for solidarity that is connected with trade union membership. For them it has been an obvious fact, that personal ideas and wishes should be subordinated to common interests. So much the more has one, especially in so-called radical labor groups, opposed having the union leadership granted the power to control and correct the decisions of the members in so vital questions as how much the workers' pay should be, how long the working time etc. One has also seen a danger for *democracy* in centralisation, and democracy must at any price be maintained in the trade union movement. It is the life-nerve of this movement.

The problem of centralisation and democracy had already been discussed more emotionally than factually from thirty to forty years ago, when a lively revolutionary-syndicalistic propaganda was carried on among the Swedish workers. Against the reformistic trade union centralisation was placed the syndicalistic decentralisation. During the last years the problem has again vitally interested the Swedish trade union world. But now the question has less concerned centralisation as such but instead more in what degree it is possible to *rationalize* the system of negotiation and collective agreements without violating democracy in the trade-unions and at the places of work.

Negotiations between the employers' and workers' organizations have certainly, for the most part, been carried on without having any greater difficulties reveal themselves as far as the method itself is concerned. The

parties have met each other as equals, often as old acquaintances with mutual respect and friendly evaluation of personal merits. But they have, as a rule, *not been absolutely equal,* when they have taken their places at the conference table. In the nature of the case, the employers' side has usually had better access to technical and mercantile experience than the labor side, which on the whole has fewer chances to make itself familiar with the technical and business concerns of the private enterprises.

This situation has, however, more to do with industrial democracy in general and has little or no connection with democracy *within* the labor organizations. With thoughts directed to this side of the case, another condition at the conference table plays an important rôle. It is usual that the employers' negotiators have the power to *make decisions at the table,* as the term goes. Such power is lacking, as a rule, the workers' representatives. That this has made more difficult both negotiations and settlements between the parties has been shown by experience many times. It has happened that the labor delegates have asked for the authority to be allowed to "decide at the table" but that the members by a general vote have refused in this way to manifest their confidence in their own representatives. Yes, it has even happened, that labor representatives under pressure of very difficult conflict situations have been forced to make settlements without hearing their constituents, in spite of the fact that these have expressly

reserved to themselves the right in consonance with the organizations' by-laws to be permitted to make known their meaning. From a democratic view point this is an extraordinarily remarkable situation!

The weakness in the system, as applied up to now, of general voting in connection with negotiations on collective agreements, has also been that no guaranties exist that the members can be persuaded in great enough numbers to take part in the voting. In certain cases, only a minority of those eligible to vote have made known their opinion. As a rule, however, 70 to 80 per cent have voted. But, because of the complex nature of the question, it has often been very difficult, if not really impossible to inform the, in many cases, large membership group, in a satisfactory fashion. The result of a general vote can, therefore, be rather confusing, perhaps even directly misinforming, since the members have had no opportunity to reach a conception based on factual information or, in addition, may have been, intentionally or unintentionally, misled by those who have carried on propaganda for one side or the other. The custom has been not to publish the mediation and conciliation proposals before they have been put to a general vote. The reason has been to hinder discussions from arising that might tend to create strife and discussion among those voting. These ought not, is the reasoning, to be exposed to pressure from unauthorized persons but to be informed factually and rationally *within* the organizations. Attempts to keep secret the results

of negotiations often fail, however, depending a great deal on the newspapers' anxiety to come in possession of them in order to satisfy their readers' demand for news. Many times it leads to the publication of incorrect information that might confuse those that are going to vote.

In order to remedy the defects in trade union democracy, a proposal has been made that the general voting be replaced by conference delegates, consisting of representatives chosen by direct vote of the members. These conference delegates should present the members' wishes and view points to the responsible leadership of the organization, should be given opportunity to take part in the preparations for approaching wage action and negotiation on collective agreements and should be kept abreast with the negotiations as well as to have the duty of examining the eventual results of the negotiations.

This proposal has in the meantime raised strong opposition in various camps. It is feared that the members' interest in union activity would be decreased to a great degree, if their direct contact with the negotiations on agreements ceases, which in its turn would weaken the organizations. To this it is replied, that after all the question is to apply the same democratic system, that already and for a long time back has been practiced in social organisms and institutions, in the state and municipalities. Such a system would, it is said, create greater security for both members and orga-

nizations than the rather primitive system of general voting.

But even a more general community interest makes itself known here. A faulty and in its workings confused system, with general voting in matters of so great importance for labor peace and the community economy as these mentioned, must call for the interest of the governmental authorities. As a matter of fact, this has also often occurred. A few years ago a motion was made in the Riksdag concerning legal measures with the purpose of creating a legal regulation of the now described and certain other questions of actual significance in the relation between employers and workers. The Riksdag requested the government to make an investigation and submitted a proposal concerning such a law, but so far the government has remained passive, most for the reason that it has wished to await the results of the efforts in the case of the parties themselves on the labor market.[8]

In close connection with the question just discussed is the problem of the trade-union federations' relations and mutual obligations, when two or more of them are affected by the same labor conflict, or through the force of circumstances are compelled at the same time to take an attitude toward conciliation proposals made by a consiliator or a conciliation commission. In the in-

[8] In Denmark, voting in connection with labor conflicts and collective agreements has been regulated in a law ,and in Norway, a special agreement, a so-called »basic agreement» has been made between the employers' association and the laborers' national federation.

terests of both labor peace and of community peace as well as with consideration for harmony between the cooperating labor groups and their common risks—for example under threat of lock-out—it is important that guaranties are provided preventing one or more groups, out of concern for their own interest, from disregarding others. Such guaranties exist to some extent in the by-laws of the Confederation of Trade Unions, § 8 mom. 7, that read as follows:

"When one or several federations whose members are engaged in the same trade or industries, or who are working for the same employer, plan, independently or jointly, to start a wage movement, such coordination shall exist that the requirements from the various federations be uniform.

Should it be necessary during such a movement, or at any time, that mutual negotiations be held with the employer, or his organization, representatives from all those federations that might be directly interested therein shall be present at such meetings.

Any decisions made during such a mutual wage movement with regard to the proposition or with regard to the beginning or ending of a conflict shall be done jointly by all the federations wich are directly interested therein."

As a rule, all too difficult disagreements and controversies have been prevented. Even in this case, however, democracy has time after time been subjected to serious trials. In Denmark it has been necessary to regulate even this condition by law.

§ 8. Swedish Laws on Labor Peace

Now we have reached the problem of legislation and the system of organization. In the following sections

we shall try to make clear, how far and to what degree the Swedish employers and workers look upon law-making as a desirable interference in the relations between themselves. First, however, a brief account should be given of the legal measures adopted up till now. It is appropriate in such a case to limit the account to what one in ordinary speech is accustomed to name "legislation for labor peace", that is, legal measures that are taken with the intention of preventing or in order to end labor conflicts and to encourage peaceful settlement concerning labor conditions and collective agreements. The social legislation that, for example, has for its object to give workers protection against accidents and illness at work and the accident and occupationl disease insurance connected with it will not be discussed in this connection. Nor the legislation on working hours, vacations and other legal measures, that more or less were needed to complement the provisions in collective agreements and to grant workers, who do not have their working conditions regulated in such agreements, necessary protection and support.

In Sweden the employers' and workers' system of organization has been allowed to develop freely and without check. There does not exist any legislation, that regulates this system of organization; a draft for a law[9] on cultural associations has recently been worked

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[9] **Om grunderna för en lagstiftning angående ideella föreningar**, by Carl Romberg, director of the legal board of the Department of Justice, Stockholm, 1938.

out in the Department of Justice but has met with sharp criticism on the part of both the employers and the labor organizations. The criticism, nevertheless, has not been dictated principally by misgivings toward a legal regulation of the system of organization. One has feared, on the contrary, that legislation will create difficulties of all kinds for the organizations. But most of all, the point is made that legal regulation is not required of necessity. These so-called "cultural associations" have, however, juridical capacity with support of common legal rules and of court precedence, that is to say, they can sue or prosecute and are liable to defend themselves before a court of legal jurisdiction in cases that concern their activity and juridical connections.

An account of the Swedish legislation in labor peace should properly begin with the *right of association and negotiation,* in spite of the fact that this means setting aside the chronological order for the origin of the laws.

As already mentioned, legal protection for the right of association was lacking even up to the year 1937, when the law on the right of association and negotiation of 1936 went into effect.[10]

According to this law, the right of association is to be kept inviolate. If this right is infringed by the denunciation of a contract or by any other legal action

[10] Svensk författningssamling nr. 506, 1936. See also A. Mollin: **Svensk arbetslagstiftning,** Stockholm, 1938; Nils Holmström: **Förenings- och förhandlingsrätt å arbetsmarknaden;** and Arnold Sölven: **Lagstiftningen om förenings- och förhandlingsrätt,** Stockholm, 1936.

or by a provision in the collective agreement or any other agreement, the said proceedings or provision shall be null and void. Law-suits relating to the right of association shall be brought in the Labor Court, which can grant damages as a consequence of the illegal action.

The assumption has been that labor leaders should not belong to *subordinate* personnel organizations; such usage has also in the course of years been developed and codified. The law on the right of association and negotiation consequently grants the employers the right to make such reservations in contracts concerning labor leaders.

In the same law it is prescribed, for the one part the employers and the employers' association respectively and for the other part the labor organizations, in case the counterpart so requires—that they enter into negotiations concerning the regulation of employment conditions as well as concerning the relations in general between the employer and the employee. If one party refuses to negotiate, the other party can call in the services of the government conciliator. The parties are bound to respond to the conciliator's summons. If either of the parties fail to fulfil that obligation, the Labor Court may, at the instance of the conciliator, order the party, under the penalty of fine, to fulfil his obligation. The parties are at liberty to take pressure measures in the form of termination of work or similar coercive measures. This applies, however, only on the condition that the said employer has not made use of

the right to demand the application of certain special negotiation provisions that are included in the law.

According to these provisions a central organization of employees can register itself with the Social Board. In connection therewith it pledges itself to an obligation to keep the peace that automatically also is effective for the employer or employers, with whom the labor organization wishes to negotiate. If the employer refuses to grant negotiation or if agreement on the negotiation question is not achieved, the employees' organization can ask the Social Board to appoint an *independent chairman*. The condition for agreeing to such a request is, however, that the organization in question includes at least half of the employees involved in the subject under negotiation. In case the independent chairman does not succeed in uniting the parties nor is able to persuade them to refer the controversy to conciliators, it is his duty to report the situation to the Social Board, which in its turn is required to appoint a *conciliation board* "for making a proposal for the solution of the matter under negotiation". Such a proposal shall be submitted to the consideration of the parties. They are free to accept or reject the same. If one or the other party rejects the proposal, they are released from the obligation to keep the peace *with respect to the controversy under discussion*. They have the right, at the latest within a month, to adopt a coercive measure (strike, lock-out, discharging of workers etc.). But the other party should be informed concerning the planned

action at least seven days ahead of time. If a period of a month passes without any action being taken, the original obligation to keep the peace again goes into effect even in regard to the actual question under disagreement. Violation of the peace agreement carries with it the liability to pay damages.

These provisions "concerning the application of the right of negotiation in certain cases" have come about mainly in order to help the salaried employees to secure their rights. Some of these employees' associations are not organized for the purpose of using coercive measures, and sometimes they are even, in certain cases, absolutely opposed to the use of such measures. However, in the camp of the salaried employees, there exists divided meaning in regard to the suitability of these provisions. Some of the most influential organizations have not registered with the Social Board but have reserved to themselves entire freedom to make use of coercive measures, should it be found necessary to make use of them. This is the case for example with one of the organizations of factory personnel, the bank personnel and the marine officers' organizations. Among those, that have registered with the Social Board, may be mentioned the Foremens' organization, the Commerce Personnel organizations (office workers and store clerks), the Pharmaceutical organization and one of the Travelling Salesmens' organizations.

The system of organization became furthermore the object of legislation long before the right of association

was enacted into law. Already in 1906 a law was passed for conciliation in *labor disputes*. It was revised in 1920.[11] With this law a rather effective conciliation institution was created. The country is divided into seven districts and in each district functions a conciliator, appointed by the Government. He has the task of following the course of events on the labor market and to offer mediation, when labor conflict threatens to break out or has already broken out. He is supposed, to cite the law, "to be available to employers and workers for bringing about agreements that are suited to encourage good relations between them as well as to prevent disturbing interruption in the work". The conciliator functions as chairman at the negotiations, in which he takes part. When he finds it appropriate, he suggests a proposal for an agreement, which is called "the conciliation proposal". If the negotiations concern enterprises within two or more conciliation districts at the same time, it is the custom for one of the conciliators, in these districts, to be appointed to take charge of them. Such appointment is carried out by the Social Board, within which there is a special department for the consideration of matters concerning conciliation and collective agreements. With more extensive and difficult labor conflicts it is the custom to entrust the conciliation to a conciliation commission, appointed by the Government, as a rule consisting of trained conciliators, with a governor or some other higher government official in the lead. It is obvious

[11] Svensk författningssamling nr. 245, 1920. See also A. Molin, op. cit.

that the parties have complete freedom to accept or reject the proposals suggested by the conciliator or by the conciliation commission. Pressure of any kind cannot be exerted by means of legislation. On the other hand, they are subjected to strong moral and psychological pressure in the press and other places, but this is another matter.

The now described legislation that is built up principally on the parties' voluntary cooperation, has always been embraced with strong sympathy in both employers' and workers' circles.

The law on conciliation of labor disputes was supplemented in 1935 by *provisions on warning*. According to these , before stoppage of work is effected—"where no valid hindrance exists"—notice of the measure is to be given the other party and the proper conciliator at the latest on the seventh day before the day when the stoppage of work is to begin. The notice shall include an explanation of the reason for the planned action. Failure to give such notice is punishable with fines, at the most, Kr. 300.—.[12]

The aim of this obligation to give notice is of course to prevent desperate coercive measures and to make possible new attempts at conciliation.

§ 9. Data from the Statistics on Strikes and Lock-outs

In spite of the fact that the conciliation institution

[12] Svensk författningssamling nr. 440, 1935. See also A. Molin, op. cit.

has to a great extent aided in preventing strikes, lock-outs and blockades, they have often occurrend and have caused great economic losses.[13] Except for the year 1909, when more than 300,000 workers were drawn into lock-outs and into the general strike, such years as 1919, 1920, 1923, 1925 and 1928 have been especially trying with respect to inclusive and extended strikes and lock-outs. The following statistical data will throw some light on the subject:

Year	No. of workers affected by stoppage of work 14)	No. of days lost through stoppage of work 14)	Relief costs to Trade-Union federations affiliated with the confederation of Trade Unions 15)	Relief costs to the Swedish Employers' federation (=Amount of damages) 16)
1919	81,000	2,296,000	Kr. 2,594,000	Kr. 2,637,537
1920	139,000	8,943,000	» 10,268,000	» 13,498,493.61
1923	102,000	6,907,000	» 5,971,000	» 6,333,977.75
1925	145,000	2,560,000	» 3,792,000	» 2,762,035.95
1928	71,000	4,835,000	» 9,152,000	» 4,537,341.57

The labor conflicts in 1920 had to a great degree been caused by disputes in connection with the legal restriction of working hours to 48 hours per week. In 1923 the conflicts grew almost entirely out of the substantial demands for wage reductions which the employers proposed and which were motivated by the difficult economic crisis. To a certain extent the situation was similar in 1925 and in 1928.

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[13] The conciliators' cooperation is naturally not always required for all interest disputes on the labor market. By far the most of them are solved by the parties themselves and, as a rule, without the use of coercive measures.

[14] Statistics of the Social Board.

[15] Statistics of the Swedish Federation of Labor.

[16] Statistics of the Swedish Employers' Federation.

Although the number of workers affected by strikes in 1932 and 1933 was a good deal less than in the before-mentioned years, labor conflicts then also caused the loss of a very great number of working days, in 1932 about three millions and in 1933, three and a half millions. The unions affiliated with the Confederation of Trade Unions paid out in 1932, 7,800,000 kronor to members out on strike or lock-out. In 1933, the corresponding sum was not less than 15,700,000 kronor. Of this amount, the year-long strike in the building trades used up nearly 15 millions. The entire number of workers affected that year by the stoppage of work was about 32,000.

During the following years (1934—1937), the number of workers affected by strikes, lock-outs etc. as well as the number of working days lost and the relief costs have been considerably lower, as disclosed by the following statistics:

Year	No. of workers affected by stoppage of work 14)	No. of days lost through stoppage of work 14)	Relief costs to Trade-Union federation affiliated with the confederation of Trade Union. 15)	Relief costs to the Swedish Employers' federation (=Amount of damages) 16)
1934	13,500	760,000	Kr. 3,051,000	Kr. 1,643,119
1935	17,000	780,000	» 1,275,000	» 388,339
1936	3,400	438,000	» 571,000	» 345,373.96
1937	30,900	861,000	» 2,420,000	» 1,610,008.58

The comparatively high relief costs reported for 1934 were used mainly for the building trades' strike, which was not concluded before February that year. In 1937, the cessation of work lasted 2 1/2 months in the same industry.

The strongly marked tendency toward a decrease in strikes and lock-outs during the four years last reported upon, can of course be explained in part by the fact that the upswing of economic conditions has facilitated the making of agreements but it has also been aided by the methods described previously, namely that in good time, before the time for giving notice has come, negotiation is begun concerning eventual changes in and additions to agreements, with the purpose of bringing about a prolongation, thus avoiding having recourse to giving notice of cancellation. This method has become used more and more in Sweden during the last few years and seems to have contributed a good deal to strengthening the psychological bases for understanding and cooperation between the parties on the labor market.

§ 10. Extent of Collective Bargaining

With the acknowledgement of the right of association follows logically that the organization is accepted as a bargaining party. This is also generally the case in Sweden. The acknowledgement of the right to organize would otherwise have been practically without meaning. This obvious fact has, however, until very recently, mainly applied to the relation between employers or their organizations and manual workers or their trade organizations. When it has been a question of employees, whose position has been considered more or less one of trust, the right to organize has not been

expressly recognized by the employers, even if they on the other hand have not openly opposed the same. The cause for this has been that the employers have been reluctant in taking part in organized negotiations, which in turn can be explained by the fact that they have desired to prevent collective regulation of the working conditions for employees of the above kind. It has been pointed out that the functions of this kind of employees are altogether too individual to be suited for judgment and evaluation in the same manner that can successfully be used in the case of manual workers. This opinion has apparently in many cases been shared by the employees themselves, and in this case the reluctance to be considered as a labor or trade union member has naturally in many instances been the determining factor.

The enactment of the law of association and negotiation has, however, apparently given both employer and employee reason to modify their view on this matter. For the latter, the right of collective bargaining has become so valuable that they do not the same as previously hesitate before the consequences of those employment conditions, which can without too much difficulty become the subject for such negotiations. Even among the employers, the objections to organized negotiations regarding the wishes and demands of their salaried employees have been practically eliminated.

A precedent for this development is to some extent to be found within trades with so highly accentuated

personal responsibility or trust as those of marine officers and druggists. The conditions of employment in this trade have been regulated by collective agreements for many years. The same is the case, for instance, with the employment conditions of the office workers for the private railroads.

In regard to the manual workers and with them comparable employees, the collective agreements have during the last 30 to 40 years applied in ever increasing degree. As early as 1908 there were nearly 2,000 collective agreements on the Swedish labor market, involving in round figures 9,600 employers and 255,000 workers. The number of trade union members at that time was calculated at 213,000.

The collective agreements reach, therefore, beyond the boundaries of the organized workers. The explanation to this is to be found in the fact that one has based the first named statement on a calculation of the number of workers affected by the collective agreement without consideration as to whether they were organized or not. It was at that time and still is in the interest of the labor organization to see to it, that the provisions of the agreement apply to and include all within the trade, and the employers have hardly any interest or reason for opposing this opinion. The practice has also developed and followed along these lines a condition, which the Labor Court has emphasized in one of its decisions (No. 95 1932). This decision states:

"With the conclusion of a collective agrement, it must generally be considered as a natural assumption that the employer, who is bound by the agreement, shall not apply inferior conditions than those specified in the agreement regarding such workers, which stand outside of the organization that has concluded the agreement but are occupied in the kind of work, which the agreement covers. Such an obligation must, therefore, even if not specifically stated in the agreement, apply to the employer versus said organization, if the agreement does not provide to the contrary. The said obligation of the employer to the labor organization, which has concluded the agreement, does not, however, confer upon the workers, which stand outside of the organization, the right themselves to invoke the agreement. Nor does it give the organization the right to negotiate for them, but in so far as the employer does not fulfil the obligation, it may make him liable for breach of agreement and subject him to payment of damages to the organization itself."

The extent of collective agreements is indicated by the following figures:

Year	Number of collective agreements 14)	Number of employers affected 14)	Number of workers affected 14)	Number of trade union members 15)
1918	2,041	10,500	316,700	304,600
1928	3,326	17,388	512,500	527,200
1937	9,585	36,300	910,800	850,000

With the centralisation of the system of organization has followed a centralisation of the system of negotiation and agreement as well. National agreements, that is collective agreements concluded for a whole industry or a whole trade covering the whole country, are expressions for this centralisation tendency. Approximately one third of all workers affected by collective agree-

ments have their working conditions regulated by national agreements, which, as a rule, are supplemented by local agreements for various localities.

The collective agreements are as a rule concluded for a period of one, two or three years and are generally subject to termination after three months' notice.

It is very unusual nowadays to find a difference of opinion between employer and employee as to the *principle* of collective agreements. One can truthfully say that employers and employees are equally interested in securing agreements of this kind. They contain without a doubt a more rational and satisfactory method of regulating wages and working conditions. In certain industries, as for example the building industry, these agreements have, however, from time to time become rather complicated and unwieldy. This is particularly the case regarding the very detailed and extensive price lists for piece work. These difficulties and annoyances, however, have partly been counteracted by the experience which the organization representatives and agreement specialists have acquired for handling matters of this kind.

§ 11. Procedure of Negotiations

The negotiation right assumes rules according to which the negotiations between the parties shall be carried on. Such rules are found in the statute of 1936, covering the right of association and negotiation. For a long time, the majority of collective agreements have

also contained rules regarding the negotiation procedure. These were standardized in the year 1908 in accordance with an agreement then made between the Swedish Employers' Federation and the Confederation of Trade Unions.

The parties were agreed both in principle and in fact that they should first negotiate peacefully with each other regarding eventual disagreements between them, before more drastic means were taken for settling the disputes. This applied in the first place to those agreements concerning the interpretation or application of the provisions in the agreement but should also apply regarding disputes that for some other reason arose between the parties. The negotiations should first take place between the parties themselves and thereafter, in case agreement could not be reached, "between the directorates of the employers' organization and the trade union respectively". Only after this negotiation procedure has shown that a positive agreement could not be reached, did both parties have the right to apply other methods for settling the difficulties; this, however, providing that the parties were not bound by an agreement of conciliation.

In such cases, where the negotiation rules were supplemented by conciliation clauses, these were limited usually to include only disputes over rights, that is the interpretation and application of the agreement ("rättstvister"). In case of disputes over wages and working conditions ("intressetvister"), both the workers' and the

employers' association have always been in agreement that conciliation should not be used except in cases where the vital interest of the public might be jeopardized. The employers' organization particularly has come out strongly for this principle. They contend that it is unreasonable and highly dangerous for the industry to be forced by arbitration to pay high wages and otherwise apply other working conditions than those that they themselves can agree to. This meaning seems also to be predominant within the labor organizations, which in addition have emphasized and explained that the workers can not agree to have their working conditions regulated by compulsion.

As a consequence of this opinion a demand for legal regulation of the minimum wages for workers in the home industry was opposed by the Confederation of Trade Unions at the Congress 1931.[17] The motivation for this action was that minimum wages could easily become maximum wages and that certain practical difficulties would be connected with the application of a law of this kind. The secretariat of the Confederation of Trade Unions came, however, to an entirely different opinion with regard to the possibility of providing a law-regulated minimum wage for the agricultural workers in the year 1937. This was particularly motivated

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[17] The chairman of the Federation of Labor at that time, Arvid Thorberg, voted at the international labor conference in 1928 against a proposal for a convention on minimum wages with this explanation, that he could not take part in any type of arbitration procedure for interest disputes.

by the state's regulation of certain agricultural products, but the secretariat explained, however, that they still were of the opinion that "wage conditions on the labor market should principally be regulated by agreements made by negotiations between the employers' and employees' respective organizations and that the assistance by the government for the solution of interest disputes on the labor market should be limited to voluntary mediation".[18]

The Swedish Employers' Federation asserted on the same occasion a negative attitude toward the principle as well as toward the present proposal for a law.

To return to the question of the procedure of negotiations, based on agreement between employers' and workers' organizations, it should be pointed out, that the parties were by no means satisfied with the provisions of the year 1908. In connection with lock-outs and the general strike of 1909, the Swedish Employers' Federation presented a demand for procedure of negotiations worked out in greater detail. According to this proposal, negotiation was to be carried on in three stages, first at the place of work, afterwards between the respective employers' and workers' organizations and finally between the Swedish Employers' Federation and the Confederation of Trade Unions. In negotiations between trade-union federations, each should be represented by three persons, who together should be able to call "an independent neutral chairman". If a negotiation re-

[18] Tidskriften Fackföreningsrörelsen, year no. 17, vol. 2, p. 427.

ferred to the Swedish Employers' Federation and the Confederation of Trade Unions concerned a dispute over an agreement, the controversy might eventually be made the subject for conciliation court proceedings in accordance with the law on conciliation. Such action might occur at the latest within twenty days after the day when the decision had been reported concerning the appointment of the conciliators.

Before the dispute-subject is taken up in accordance with the rules from the procedure of negotiations, no strike or lock-out shall be adopted in connection with the dispute.

The Confederation of Trade Unions explained that it was willing to negotiate concerning this proposal for negotiation procedure but set up as condition that the labor conflict then in existence should first be concluded. The employer party did not wish to agree to this condition and as a result the procedure of negotiations was not passed at that time.

Since then no serious attempts were made to solve this problem before the significant negotiations that began in 1936 between the Swedish Employers' Federation and the Confederation of Trade Unions, and resulted on December 20, 1938 in a decision on a "basic agreement"[19] (The so-called Saltsjöbad negotiation, from the name of the place near Stockholm, where the meetings were held).

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[19] Basic Agreement between the Swedish Employers' Federation and the Confederation of Trade Unions. Stockholm, 1938.

This agreement is given in extenso in Appendix I. We shall give an account of the different subjects that are discussed in this document in their order.

In the first place as regards the provisions on the procedure of negotiations, it is assumed that, as the respective employers' and workers' organizations agree thereon, they shall gradually replace those that were included in collective agreements in accordance with the 1908 model. "The basic agreement" shall namely become effective gradually as different organizations affiliated with the Swedish Employers' Federation and the Confederation of Trade Unions accept it.

The new procedure of negotiations concerns both disputes over the interpretation and application of agreements and interest controveries that arise between the parties to the collective agreement while the agreement is in force. Up to this point, the procedure of negotiations corresponds to the provisions of 1908. Interest disputes that concern the adoption or the prolongation of collective agreements as well as sympathetic measures have been entirely omitted. It has even been explicitly stated that the procedure of negotiations has no application when it is a question of recovery of incontestable wages or other compensations which have fallen due. But even in connection with all these exceptions the rule shall hold that a coercive measure may not be adopted unless it has been "decided or approved by the respective trade-federation". This reservation means only a confirmation of an already developed

practice that has been included in the by-laws of the respective organizations. By being specified in collective agreements it achieves, however, a juridical effect that practice and by-law provisions lack.

The main rule is that a dispute on working conditions or on relations on the whole between the parties may not be referred to the Labor Court or to a conciliator (or conciliation board) or lead to the adoption of strike, blockade, lock-out or any other similar measure—even if it is allowed under the law or by the collective agreement—before the party tries through negotiation with the other party to bring about a settlement in accordance with the procedure of negotiations. The other party is obliged to enter into such negotiation.

Exception to this peace obligation has been ruled for those cases when negotiation has run into hindrances that have not depended upon the party desiring to negotiate, or when the other party adopts a coercive measure to solve the dispute without having observed the prescribed obligation to negotiate.

Negotiations may be conducted partly *locally* between the two parties directly concerned and partly *centrally* between the parties' respective organizations. The proposal for local negotiation shall be made "without unnecessary delay" and be begun at the latest two weeks from the day when the proposal was made. If a central negotiation is requested, the request shall be made at the latest two months after the local negotiation was

concluded. Such negotiation shall begin at the latest within three weeks.

A certain period is prescribed, during which a party may submit a controversy which has been the object of consideration, to examination by the Labor Court or by a conciliator or conciliation board. This shall take place at the latest three months after the negotiations have been concluded. The same delay has been stipulated for the one that wishes to decide a dispute concerning which negotiation has been conducted by means of a *coercive measure* (sometimes translated hostile actions, or direct actions). Such a measure, as pointed out above, may, in addition, not be adopted unless the respective organization's board has made a decision concerning the matter or has approved it.

For the parties on the labor market it must be important that the claims which they might wish to present should be made effective without unnecessary delay. In order to look after this desire, the procedure of negotiations has been supplemented by *prescriptive regulations.*

According to these, the right to request negotiation is forfeited if and to the extent that the condition to which the request refers extends more than two years back in time. The same holds good if and to the extent that the condition in question was known on the employer part, to the employer or to his organization and on the labor part, to the proper trade-union federation or local organization for four months, without having

requested negotiation. The forfeiture of the right to negotiate carries with it also the forfeiture of the right to refer the dispute to the Labor Court or to a conciliator as well as the right to adopt a coercive measure. It should be noticed that these prescriptive proposals concern only the claim itself and not the interpretation of the provision in the agreement on which the claim is founded.

§ 12. The Labor Market Board

As a crown to this procedure of negotiations, may be regarded the negotiation and conciliation board which has been constituted in accordance with certain provisions in the "basic agreement". This board is called the *Labor Market Board* (Arbetsmarknadsnämnden). It consists of three representatives of the Swedish Employers' Federation and three representatives of the Confederation of Trade Unions. These are chosen for three year periods. The number may be supplemented with an independent person, who in such an instance shall function as an independent chairman. In addition, the organizations concerned on the employers' part and on the workers' part shall be given the opportunity to be represented on the board, to the extent that the board has to take into consideration subjects that concern them.

The Labor Market Board's most important duty is, in its character of negotiation and conciliation board,

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to take up questions pertaining to the discharge or temporary dismissal (furlough) of workers and to so-called socially dangerous labor conflicts. In addition, it shall take up and decide controversies on the validity or the correct meaning of the provisions included in the basic agreement concerning the limitation of economic coercive measures, in what way a certain action would violate these provisions, or regarding the consequences of an action alleged to have been violating these provisions. In such questions it functions as a conciliation board. We shall recur to the provisions now discussed.

§ 13. The Law on Collective Agreements and the Labor Court

In spite of the great and significant rôle of collective agreements on the Swedish labor market since the beginning of this century, a legal regulation of them did not come into being before a decade ago. Attempts to bring about legislation on collective agreements were made, certainly, already in 1910 and 1911, but were unsuccessful. Demand for such legislation was presented thereafter on different occasions but led to a definite result for the first time in 1928, when the law on collective agreements and on the Labor Court was instituted. This took place in opposition to a widespread and strong labor opinion, which culminated in a protest strike in which approximately 370,000 workers took

part.[20] The strike was declared by the Confederation of Trade Unions and by the Social Democratic party's leading tribunals.

In the manifesto which was addressed to the workers, the negative reaction was explained as follows:

"The present legal proposals have not come into existence because of any desire expressed thereon on either the workers' or the employers' part.

The conditions that the laws aim to regulate, present no need whatever for the state to take action, in this case with legislation that is inadequately planned and directly injurious in its effects. The contents of the suggested laws are actually suitable for making decisions on collective agreements more difficult in all spheres and within certain spheres can absolutely make impossible reaching such agreements. The laws are therefore suitable for *endangering a sound development* in those working spheres that collective agreements ought to regulate."[21]

This exaggeratedly pessimistic idea of the concequences of the suggested legislation can to some extent be explained by the fact that within the trade union world they had not devoted the strict factual investigation to the law proposals that should have been made. The adoption of the attitude had been primarily determined by a suspicion, nourished on the then existing sharp political opposition toward legislation, generally speaking, concerning the relations between employers

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[20] This happened May 22, 1928, that is to say, immediately before the Riksdag began to consider the legislative proposal of the Liberal Government.

[21] Manifest till Sveriges arbetande folk. Tidskriften Fackföreningsrörelsen, 1928, year no. 1, p. 513.

and laborers. A propaganda dictated by more purposeful and energetic rather than kind and noble motives, with demands for measures against actual or pretended defects in the workers' trade union organizations had in addition not been suited to encouraging trade union members to be favourably disposed to the law proposals in question. It was feared also that these laws would be the introduction to a series of other laws that would mean dangerous interference with the trade union movement's freedom and existence by the legislative power and this could lead to undesired consequences in connection with the workers' sense of responsibility and to the significance of this sense for community peace. The chairman of the Confederation of Trade Unions of that year, Arvid Thorberg, wished to express this fear, when he declared in the First Chamber: "For my own part I am of the general opinion that it is better for people to do as the heathens who do not have law, but from nature do what the law includes, that one from one's own moral power acts right and does right, than that one introduces legislation which creates feelings of wishing the opposite, within a social movement that has up to now been honorably and morally strong".

Experience during the ten years that have passed since these laws went into effect have not fulfilled these pessimistic predictions. Collective agreements have not been obstructed in their development. The statistics presented above speak clearly. Nor can any moral perils be proved. It seems rather to be the case that this legisla-

tion strengthened both the moral and juridical bases of continued development for the welfare of the parties to collective agreements as well as for the common good.

This debated legislation now meets with no opposition worth mentioning among trade unionists—if one excepts the building trade workers where the opinion prevails that trade union activity has suffered injury from it.

As far as the law on collective agreements[22] is concerned, it should be pointed out first that its purpose is not a complete and therefore, presumably, not a final regulation of collective agreements. In large measure it represents a codification of a practice developed on the basis of collective agreements. Swedish law developed at an earlier date in this field has likewise to a great extent been left untouched.[23] The aim in this law has been above all to create legal rules with respect to the treatment of disputes over the interpretation and application of collective agreements and with respect to decisions on interest controversies; that, is to say, controversies concerning conditions that are not regulated by collective agreements are not affected by this law. By creating a special court—the Labor Court—[24] for cases concerning collective agreements one has moreover wished to make possible a more rapid trial of

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[22] Svensk författningssamling nr. 253, 1928. See also A. Molin, op. cit.

[23] In the absence of a law on collective agreements, general legal rules on agreements have been applied in cases on such agreements.

[24] Law on the Labor Court. Svensk författningssamling nr. 254, 1928. See also A. Molin, op. cit.

such cases than could be carried out in the general courts, an aim that clearly corresponds with the intentions of both employers and workers. The Labor Court's verdicts may therefore not be appealed. In order to guarantee to the Labor Court the greatest amount of knowledge on the subject under negotiation, the employers and workers have been granted opportunity to be represented in the court. The court consists namely of seven members appointed by the Crown, of which two are proposed by the Advisory Council of the Swedish Employers' Federation and two by the Confederation of Trade Unions. The remaining members are chosen from "persons who can not be considered as representing employers' or workers' interests". One of them functions as chairman and another as vice-chairman.

The core of the law on collective agreements is in the fourth paragraph. In this paragraph is prescribed a compulsory obligation to keep the peace by the employers and workers, and by their respective organisations bound by the collective agreement. The *peace obligation* holds good first and foremost for disputes over rights in their widest meaning, i.e. disputes over the validity, continuance and correct interpretation of agreements as well as any dispute over whether a certain action is contrary to agreement or law. In connection with such disputes, strike, lock-out, blockade, boycott or similar measure may not be taken. The prohibition of a coercive measure has in view also those cases when one of the parties wishes to change an agreement that

is in force, or when it is a question of adopting a provision while the agreement is in force, which is to go into effect after the agreement has expired. Finally, employers, workers and organizations bound by a collective agreement are forbidden to aid anyone who does not himself have the right to take a coercive measure (so-called sympathetic coercive measure).

The organization may not by giving support or in any other way cooperate in illegal coercive measures which their members (local branches respectively) have adopted. If the organization is a party to the agreement, it is also responsible for trying to prevent its members and eventually the local branches from taking such measure. If a coercive measure has already been adopted, it is the organization's duty to try to persuade the offenders to give it up.

It is the Labor Court's task, then, to give verdicts in cases concerning collective agreements. Violation of agreements and of the law on collective agreements can lead to assessment of damages in accordance with the rules given in the law.

The parties to the collective agreement, however, are free to agree to refer disputes that arise between them to a concilator or a conciliation board instead of referring it to the Labor Court. This alternative has, however, not been used in general. The Labor Court has more and more become the forum for differing parties to collective agreements. From 1929 to 1937, 1627 cases were tried

by the Labor Court. Of these, no fewer than 82.5 per cent were submitted on the part of workers and 16.9 per cent on the part of employers, the rest were submitted by common action to the court. Approximately two-thirds of the Labor Court's verdicts have been unanimous.

§ 14. Sympathetic Coercive Measures

The prohibition against sympathetic coercive measures in the law on collective agreements deserves special attention. This prohibition is limited to those cases when the purpose is to aid some one that is bound by the peace obligation prescribed by the law. This prohibition does not have any very great importance from the point of view of labor peace. As a matter of fact, the same situation holds good for the peace obligation prescribed by the law on collective agreements. The fact is namely this, that in Sweden it is exceptional for the parties on the labor market to become engaged in actions that are violations of agreements or of laws. And almost as unusual has it been that the parties to collective agreements have made legal controversies over the agreement the subject of coercive measures. When labor peace is seriously threatened it is, as a rule, a question of pronounced interest controversies in connection with the usual wage movements and negotiations for agreements. Then sympathetic coercive measures can play an important part. If the employers in a certain field of work are subjected to a strike because

a settlement in a wage and agreement dispute has not been worked out, the proper employers' organization may feel compelled to adopt a lock-out against the workers in other fields of work in order to hinder them from aiding the strikers or in order to exert moral pressure on them and their organizations. A labor organization may on its part find it expedient in a certain situation to make use of a sympathetic strike as the answer to a coercive measure used by the employer against another labor organization or to compel a more rapid settlement than may be considered possible if such aid is not given. The general strike of 1909 was nothing except a sympathetic coercive measure. The same was true of the extensive lock-outs that were adopted at the same time on the employers' part.

The right to interfere in this way has always been strictly insisted upon. Already in 1907 the Swedish Employers' Federation converted the Confederation of Trade Unions to accepting a section in an agreement in which it was provided that a lock-out, adopted by an employer, which had been decided upon by the proper employers' organization, should not be considered as a violation of a collective agreement, nor should a strike or blockade taken by workers after the approval of the board of the proper trade-union federation. Such lock-out, strike or blockade should, however, not be allowed in order to bring about a change or addition to agreements in force. Not even a claim for change or addition should be presented by either party. Furthermore, the

board of the Swedish Employers' Federation determined in 1910 the following principle in view of the Government's plans at that time for legislation on collective agreements:

"The employers' right, even under collective agreements that are in force, to call a sympathetic lock-out in order to aid an unjustly attacked colleague is a fundamental thesis for the employers' organizations, without which they could not even approach fulfilling their purpose. No provisions that encroach upon this right of the employers may therefore be included in collective agrements."

In that proposal for a law on collective agreements, which was submitted to the Riksdag in the last-named year but was rejected, a provision had been included concerning the right to sympathetic measures during the period the agreement was in force. This provision was explained by a reminder that the employers' efforts must be directed toward securing national agreements and also to get common expiration time for agreements that were in force for related economic branches or those depending on each other.

Until such procedure had been created, the Government reasoned that a prohibition in law against terminating work while the collective agreement was in force would negative the advantages of organization for the employers and thereby also would counteract the bringing about and maintaining such agreements.

National agreements now regulate, to a great extent, as has been indicated in the foregoing, the conditions

of work on the Swedish labor market. The time for giving notice of cancellation and for expiration has also been determined upon identically in large groups of agreements. With partiality, the first of October has been chosen as the day for giving notice and the thirty-first of December as the day for the expiration of agreements. In practically all the more important collective agreements on the private labor market, there are provisions about the right to take sympathetic coercive measures while the agreement is in force. Neither among employers nor among workers does the wish now exist to abandon this right. Both parties set a value on this right, not the least because it undoubtedly provides an important guaranty for the continuance of collective agreements in times when opposition can be so severe that coercive measures tending to break down the agreements perhaps become unavoidable, if no mutual concessions are made. The lock-outs and the general strike of 1909 can be mentioned as examples. Thanks to the provision, already then included in collective agreements, on sympathetic action, the status of collective agreements was left pretty much untouched by this great struggle between the employers' and the workers' organizations.

The present law on collective agreements, as previously stated, has not brought about any change in the above described conditions.

The right to take sympathetic coercive measures has in recent years been the object of the government's and

the public's attention in connection with the subject of protection for the *third party's right to neutrality* in economic struggles. Such measures are of their nature bound to affect the third party. No reason, however, has been seen to exist for extending the protection for the third party to organizations or their members. Trade-union members that are united in the Confederation of Trade Unions must be prepared to take the risk of being exposed to lock-outs in connection with strikes or lock-outs within other trades than their own. And the same is true for organized employers. Neither of these parties, consequently, have made any demand for legal protection in this connection. When collective agreements are concluded between the Employers' Federation and the Confederation of Trade Unions, the assumption has been that attacks on the third party in the present sense should be allowed. The opinion has namely been explicitly stated that without hindrance due to the prohibition in the concluded agreement against attack on the neutral third party, coercive measures may be taken provided the aim is thereby to aid a party in this dispute through an extension of the original dispute concerning the concluding of a collective agreement. Such a sympathetic coercive measure may likewise not include anything but a lock-out, or strike, or labor blockade or, in addition, the refusal to concern themselves with goods that are intended for or come from an enterprise that is carried on by a party to the original dispute.

§ 15. Strike-Breaking and Protective Work

Now we have reached a problem of especially sensitive and complicated nature. Severe differences of opinion have existed, quite naturally, between employers and the workers organized in trade unions concerning that which one calls strike-breaking, a more expressive than adequate term; in this expression is included, usually, every type of disloyal action in connection with labor conflicts but especially the refusal to respect the labor organizations' decision in favor of a strike or blockade. It has been impossible for the trade union people to tolerate the strike-breaker, either if he were among those who stayed at work when his working comrades have gone out on strike, or have been exposed to a lock-out, or as an outsider has found it expedient to take advantage of the situation and step into the striking or locked-out workers' place. If he belonged to the first category, he has usually been able to enjoy his employer's special attention and sympathies. This has in general also been the lot of those who are recruited from the outside after the strike or lock-out has begun. The so-called bourgeois opinion has also been comparatively unreserved in favouring those "willing to work".

At the time of the advent of the trade unions thirty to forty years ago, strike-breaking often played a rather decisive part in conflicts on the Swedish labor market. It even happened that the labor organizations wage-political actions were contested with the help of imported laborers from foreign countries. This took place

in the bakery business in Stockholm and Göteborg, when striking Swedish workers were replaced by Germans, at a machine shop in Skåne to which Russian workers had been imported, and during a general longshoremens' strike in 1908, when a great number of more or less broken-down individuals from the English docks were hired by the Swedish shipping firms. In that period, very difficult behavior often took place, in some cases of criminal character. In great part, however, labor conflicts were conducted in a human and comparatively peaceful manner.[25]

Neither has the legislative power found any cause for taking special measures in regard to legal procedure and protection of rights in connection with labor conflicts. In 1899, it is true, a law vas passed, the so-called Åkarp law[26], by which it was desired to give protection to persons, who through refusal to take part in the stoppage of work were exposed to undue pressure in the form of threats or reprisals. It came about under rather exceptional circumstances. The highest court refused to support the promulgation of the law. It was found, namely, to be contrary to existing juridical principles and was looked upon generally as a class law.

It took until the year 1938, however, before it was

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[25] The most difficult disturbances that have occurred in Sweden in connecetion with labor conflicts, culminated in an encounter between strikers and a military command in Adalen, 1931. Then five workers were killed, while an equal number were more or less seriously wounded.

[26] The law got its name from the name of the initiator, a farmer, Pehr Pehrsson, who came from Åkarp, (Skåne).

annulled. Then it had practically speaking been transformed to a relic of a legislative concept which the general sense of justice had never accepted.

With the energetic extension of the labor organizations and their growing influence, strike-breaking came to have less and less meaning. It has become very unusual for employers to try to replace laborers out on strike or lock-out with persons who perchance could be found to take their place. And equally exceptional is it that so great a part of the labor force is prepared to stay at work, after a strike or lock-out has begun, that it pays the employer to maintain operation with its help. A strong auxiliary reason why strike-breaking no longer plays the same rôle as before is naturally the fact that capital and labor through mutual respect and consideration put a high price on preventing any interruptions of work that are not desirable or necessary.

This problem, however, is by no means entirely out of the way. And it will likely never disappear completely. It can, on the contrary, easily become actual again.

Conscious of this possibility, the Swedish Employers' Federation and the Confederation of Trade Unions have included provisions in their basic agreement which are intended to regulate this problem. This has been done in connection with the enactment of protection for the third party.

The agreement distinguishes between a neutral and an unneutral third party. Coercive measures may not be taken against a *neutral* third party 1) in disputes

pertaining to concluding a collective agreement; 2) in disputes pertaining to concluding or the application of, an individual employment contract; 3) in competitive disputes regarding prospective jobs; and 4) in order to induce a party to join, or to prevent him from withdrawing from a trade union.

As an *unneutral* third party, who, therefore, is not included in the agreement's protection provisions, is regarded first and foremost a member of an organization involved in a labor dispute, who sets aside his obligation to the organization to the advantage of the opposing party. Any one who performs work that is blockaded in connection with the controversy, in other words, a strike-breaker, belongs to the same category. These provisions hold good in corresponding degree for the one who employs workers, who in connection with the dispute have been blockaded (boycotted) by the employer party, as well as the one, who gives the party economic support during the dispute and in connection with it, or who aids him by transforming or otherwise altering his own enterprise or activities. Any one who has a controlling interest in a corporation involved in the dispute is considered as an unneutral third party.

The same holds good for anyone who is joint owner without limited liability in a company involved in the dispute, as well as in a corporation in which a party to the dispute owns shares, or in a company in which a party to the dispute has a joint interest, provided the activities of the corporation or company, considering

the amount of shares held or the extent of the joint-ownership as well as other circumstances, must be regarded as in reality being conducted for the party to the dispute.

Similar provisions as the ones now described had been included in the proposal for a law on certain economic coercive measures (including protection for the third party) which the Social Democratic Government laid before the 1935 year's Riksdag, without reaching a positive result. Corresponding proposals to these of 1935 had hitherto been lacking in the Swedish collective agreements, very likely because, on the employers' part, it has been difficult to agree to make concessions to that interpretation of strike-breaking which was maintained in the trade union world. There they have been equally disinclined to admit the right of the employers' organization, by means of boycott, to prevent workers affected by coercive measures to get other work during strikes and lock-outs. Indirectly, this right has been admitted in the basic agreement where one has naturally tried to achieve the greatest possible reciprocity.

In regard to the right to take coercive measures against an unneutral third party, a very significant exception has been placed in the basic agreement. This exception concerns so-called *protective work*. Even in this regard, the basic agreement corresponds to the law proposal which the Government placed before the 1935 year's Riksdag. Provisions on protective work during

stoppage of work have on the other hand hitherto not been included in collective agreements, if one excepts a few agreements worked out for labor leaders. Superintendents, foremen and others in similar position, through their organization, *the Swedish Association of Foremen,* have namely always maintained their right to remain neutral in conflicts between employers and workers. They hold strictly to their claim to be allowed to practice their functions as foremen during such conflicts, but consider that they ought to refuse to do any other work except that which cannot wait without causing danger for people or injury to buildings or other property, machines, domestic animals or the like. Such protective work has generally been exepted even when the employers' organizations have caused stoppage of work. It has always been considered obvious, for example, that pumping work in mines shall continue even during a strike or lock-out. During the general strike of 1909, all work was excepted that had to do with the care of sick people, or the care of living animals as well as work at the light, water and sanitation plants. Any scruples based on principle against the regulation of protective work in collective agreements have not been found on the trade union side. But it has not been easy to find a definition of this term satisfactory to all parties—employer, foreman, laborer and the public. An attempt was made in connection with the formulation of the law of 1935, and in the present basic agreement, this attempt has been fulfilled and has

led to a good result as far as can be judged. In this agreement the term protective work is defined as follows:

"As protective work shall be regarded such work which in the event of a conflict must be done for stopping the production in a technically reasonable way, as well as such work which is necessary for preventing danger to people or damage to buildings or other establishments, ships, machinery, or live-stock, or damage to such stocks of commodities which during the conflict are not employed for maintaining the production of the enterprise or for sale to a greater extent than required for preventing any deterioration or destruction which the goods may be subjected to owing to their nature.

As equal to protective work shall be regarded the work which anyone may be required to perform by virtue of special provisions under existing law, as well as work the neglect of which may constitute breach of official duty."

These are general provisions.

It has been understood at the time of concluding the basic agreement that the detailed meaning of protective work within the fields of various trades should be specified through agreements between the respective unions. It has, furthermore, been taken for granted that the regular workers of the enterprises will, when found necessary, agree to undertake such work, in case of strike or lock-out and providing the enterprise is not operating during the conflict.

The above mentioned Labor Market Board has been given an important task as regards the application of the provisions regarding the third party and protec tive work. The board has thus in form of a conciliation

board to take these matters under advisement and in addition, disagreements regarding the applicability and legality of these provisions as well as to determine whether a certain action is a breach of the same. It has also to decide as to the consequences of such acts.

When considering questions of this kind the negotiations of the board shall be presided over by an independent chairman if it is found necessary in order to reach a decision.

§ 16. Conflicts Involving Functions Essential to Society

Closely related to the question discussed above are the rules found in the basic agreement regarding conflicts which have consequences vital to community functions or to use a popular but less adequate expression —labor-conflicts dangerous to society. One has, as a rule, meant strikes in state and municipal works and undertakings; lock-outs in such enterprises have been considered as out of the question. Demands for laws preventing such stoppage of work have often been expressed in the press and the Riksdag. Difficult legal technicalities have, however, been presented in the efforts to find a satisfactory solution to this question. This has particularly been the case as regards the definition of the phrase "dangerous to society". A committee appointed by the Government in 1934 approached the question from angles other than the usual ones. According to the conclusions of this committee, legal

protection should be provided in the form of a prohibition of stoppage of work in such cases where the undertaking does not aim in the first place to satisfy an employer's economic interests.[27] This definition extends on one side beyond the boundaries of state and municipal activities while, on the other side, in certain ceses, it excludes undertakings of state and municipal nature. The committe states in its explanation, among other things, the following:

"Wherever the labor agreement does not concern the satisfying of any of the employer's economic interests, it shall be taken for granted that stoppage of work, as a rule, concerns more immediate vital community functions. A prohibition of stoppage of work in such cases seems to be in close agreement with general legal opinion. Furthermore, it appears to be easier in this case to find ways and means for a just determination of the parties' opposing interests. As examples of this kind of employment may be mentioned the police force, firemen, sanitation and public health employees. Even here one will naturally find border cases of more or less dubious nature. Municipal establishments for light and power, water and gas etc. are to some extent business undertakings which often leave considerable profit. Even in these cases, however, it is unlikely that the profit motive is the deciding factor, but rather the supplying of the above necessities to the district. These undertakings, it seems, should therefore be most closely comparable to and placed in the same category as those where the nature of the labor agreement does not aim at satisfying the employer's economic interest. Closely comparable to these are certain state undertakings of monopolistic nature, which only in the second place aim at providing state income, by which the state in the

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[27] Betänkande om folkförsörjning och arbetsfred, part I, p. 116. Stockholm, 1935.

first place aims at satisfying a public need. Amongst these should be considered as example the postal and telegraph service. One is more hestitant to include in this group such undertakings that operate partly in competition with private business of equal nature as for instance the State Railway and the Hydro-Electric plants."

The attempt to find an adequate definition for the concept in question has been abandoned in the basic agreement between the Swedish Employers' Federation and the Confederation of Trade Unions. In the description of the general grounds for the agreement, it is stated that no nearly statisfactory demarcation of those fields of activity which ought to be protected against labor conflicts because of their especial importance to society can be brought about, with any claim to objectivity and general acceptance:

"Already the fact that the interests of Society are always dependent on the extent of any particular labor conflict makes such a prefixed demarcation impossible. Any certain activity is rarely in itself as fundamentally essential to Society as to call for protection against any and all labor conflicts. On the other hand a conflict, which in itself is by no means directed against any functions particularly essential to Society, may yet by its very existence to a certain limited extent impede or even prevent activities which are essential for providing the general public with safety as to life or health."

When the necessity, thus, of preventing or limiting a certain conflict is dependent upon the circumstances in the special case, the Swedish Employers' Federation and the Confederation of Trade Unions have found that there no other solution appears to exist except to per-

mit a mutual consideration of opposing interests in each conflict, with due regard to be granted also to the interests of society as a whole. And to make possible such a method, both organizations have agreed to equip the Labor Market Board with the power to examine the question of preventing, limiting or removing labor conflicts that can disturb functions essential to society. The Employers' Federation and the Confederation of Trade Unions have in regard to this problem agreed to take up every conflict situation for examination as quickly as possible, where the protection of the general interest is demanded by either organization, by a public authority or by some other comparable organ that represents the common interest.

In taking such matters under consideration the Labor Market Board shall function solely as an *organ of investigation and negotiation*. In case a majority is secured in connection with the labor conflict referred to the Board, and in favor of the requisite regulation of the conditions of work connected therewith, it is up to the above-named two head organizations, each one for his side, without delay to take measures for carrying out a settlement between the parties involved.

§ 17. Protection against Arbitrary Dismissal

In Sweden as in most other countries the general legal principle is in effect, that employment agreements that have been concluded for an indefinite period, can be cancelled upon notice by either party, at the expira-

tion of the period for giving notice. Cause for giving notice need not be presented, whether it is carried out by one or the other party.

On this general principle, the foregoing quoted § 23 (See page 20) of the Swedish Employers' Federation by-laws have been based. The therein prescribed obligation of the association's members not to conclude collective agreements unless the employers' right freely to hire and dismiss workers is specifically stated, thus means only that the members are not allowed through agreements to relinquish the general legal principle in question but are obligated to see to it that it is confirmed in the agreement.[28]

In the foregoing (page 20—23) an account has also been given concerning the origin of the agreement provision which since 1906, in part, among other things has regulated the employers' right freely to organize and apportion work as well as freely to hire and dismiss workers; in part, has granted the right of association a certain protection. With this provision in the agreement, a limitation to some extent has been adopted in the employers' right of dismissing workers. If the dismissal occurred under circumstances that give cause for suspicion that the worker's right of association has been infringed upon, the worker has the right "through his organization to demand investigation to secure redress". If it is proved that the right of association was infringed upon, the employer can be compelled to take

[28] Arbetsdomstolens domar, (Decisions of the Labor Court).

back the worker and moreover can be declared liable to pay damages.

On the whole, however, the sovereignity of the employer has remained untouched. The difficulties of furnishing proof have limited the workers' chances of going to law about violations of the right of association in connection with the dismissal of workers. This has had for result that a strong labor opinion has arisen against the provisions in question, generally called "paragraph 23". Nevertheless, in general, one has not had so much to bring up against the legal rule itself in spite of the fact that this, considered from the part of view of principle, can not be reconciled with the labor organizations' aims for an "industrial democracy" in the form of the greatest possible share in control over working terms and working conditions. The expression of opinion by laborers has above all concerned the lack of security in connection with possibilities for employment and selfsupport brought about by an arbitrary application of the provision in the agreement based on the legal right. They have demanded that paragraph 23 should be omitted from collective agreements but have finally realized that with so "radical" and simple an encroachment very little would be gained as long as the above-mentioned legal rule is left undisturbed. If one wished to achieve a realistic change for the better in regard to the security of employment, one should direct one's efforts to supplement paragraph 23 with agreement provisions which would make it pos-

sible to bring about a positive and effective treatment of dismissals in general and not only in those cases when it can be assumed that a violation of the right of association was at hand.

During the negotiations between the Swedish Employers' Federation and the Confederation of Trade Unions that led in December, 1938, to the basic agreement, a great deal of attention was devoted to this subject. Those provisions on "discharge or temporary dismissal", in which the parties thereby agreed, can be expected to become of great importance with regard to the management of controversies that arise in connection with the application of paragraph 23. "They are", as it is explained, "devised in consideration of the justified demand of workers for security in employment and in consideration of the dependence of industry on the skill and suitability of the labor employed". Here shall now be given a brief account of this section of the agreement.

When dismissing or furloughing workers[29] from an employment which has lasted not less than a year, the employers shall advise the representative of the proper labor organization at least a week prior to giving notice of the planned action (so-called *warning)*. A conference shall take place between this representative and the em-

[29] By furloughing (permittering), is meant the reduction of the number of workers or of the entire labor force because of a more or less temporary lack of work without the conditions of employment being considerad broken.

ployer, if either requests the same; exceptions have been provided for in the case of shorter temporary dismissals, seasonal work, intermittent work, etc.

If discharge or temporary dismissal has taken place and the labor part wishes to negotiate with regard to the measure if there is no question of the violation of the right of association or if the action does not fall within the field of the court or the conciliation board, the situation shall be referred to the executive board of the proper labor organization. This board, in turn, may refer the question to the Labor Market Board. In such a case, it is the Labor Market Board's duty through a careful investigation to try to reach an accurate insight into all the circumstances under which the measure in question was taken. When judging the measure, consideration shall be given to the necessity for the employer to be served by efficient and for his activity suitable workers, when the choice is between workers of similar skill and suitability, consideration shall be taken to the length of employment and to any one bearing a heavy sustenance obligation. In this case, one conception always upheld energetically by the labor organizations has been considered, a conception that in addition coincides with a practice already developed.

When a question of this character is considered, the board shall attach to itself a representative from each of the respective employers' and workers' organizations involved. The executive boards of these organizations

shall be informed of the Labor Market Board's decision, and it rests on them in collaboration with the Swedish Employers' Federation and the Confederation of Trade Unions "to take the measures which may be called for by the decision". An employer that suffers inconveniences because his employees give notice to quit their work, may with the approval of his organization refer this matter to the Labor Market Board for its decision.

With regard to the application of paragraph 23, whose retention is assumed, the Board will also function as a *negotiation and conciliation organ.* It can not make binding decisions for the parties. It will undoubtedly not fail to have great significance by contributing to a decrease of the suspicion directed on the part of labor against paragraph 23 and the general legal principle for which this agreement provision is an expression. Great importance must be granted to the conferences that will take place before dismissal or furloughing can be carried out. Here lies, in truth, the central point of the described provisions in the basic agreement. The executive officers of the Confederation of Trade Unions have also clearly understood that these provisions offer satisfactory guaranties against arbitrary and unjust dismissals. Employers that are responsible for such dismissals, should namely find it difficult to avoid giving information to the Board, composed according to the parity principle, which is required for an objective judgment of the proposed action. And with this it must be admitted that a great deal has been won.

§ 18. Protection for Outsiders

The system of negotiation and agreement, which has been created by the parties on the labor market, has quite naturally been largely determined by the relations of the parties to each other. The eventual interests of outsiders in such a relation or their need of protection as third parties have in general not been made the subject of agreements between these parties. To the extent that their rights and interests are threatened or are violated, it has been considered that it was the task of the legislative power to seek remedial measures. Employers and their organizations have often united with those who have demanded legal protection against undue blockade and boycott measures on the part of the labor organizations, and the laborers and their organizations have not neglected to demand similar protection against ejection in connection with strikes or lock-outs of workers, to whom the employers have let houses. A protective law of the latter type, as a matter of fact, was passed in 1936.

Some undue interference, during the 1920's, from certain employers' organizations, that were given a great deal of notice in the bourgeois press, occasioned a series of energetic actions in the Riksdag that led to the Government arranging an investigation in order to discover how and to what extent legislative measures were necessary. Concern was felt especially for the third party's right to neutrality in labor conflicts and in other economic struggles. Finally this matter was re-

ferred to a Committee of Thirteen, with the chairman of the Labor Court, Justice Arthur Lindhagen, as leader. A report of this committee, made in the spring of 1934 to the Government, with a proposal for a law concerning certain economic coercive measures etc., contained however, not only provisions for the protection of the third party. According to this report, the legal protection should be extended to cover the party to the conflict in certain cases.

When the Government in 1935 referred the beforementioned proposition to the Riksdag, it followed in all essentials the intentions of the Committee of Thirteen. The Riksdag, in the meantime, did not reach a definite decision. This result did not depend, however, on any disinclination in and for itself to cooperate for legislation in this field, but can be explained by the great differences of opinion on a few details, that became effective on the one part, between the Government, supported by the Social Democratic party, and on the other part, the bourgeois parties, especially the Conservative party.

Neither had any strong echo of the suggested legislation been marked among employers and laborers. Neither of these parties wished for its passage. They did not feel any fundamental opposition to legal protection for the third party, but they had become more and more convinced that from all view points, it would be best if they themselves could solve the problem in a voluntary way. It did not take long, therefore, before negotia-

tions with this aim were begun between the Swedish Employers' Federation and the Confederation of Trade Unions. Even if these negotiations aimed above all at those subjects, of which an account has been given in the foregoing, they aimed also at bringing about a regulation of the relations to the third party and the other outsiders included in the report of the Committee of Thirteen and of the Government's legislative proposal. The basic agreement, which was the result of the negotiations, corresponds as follows with these proposals for legislation.

A special chapter with the title "limitation of strikes, lock-outs and other direct actions" (i.e. coercive measures) is devoted to the subject in question. We have already discussed the provisions in this chapter, that concern a neutral and an unneutral third party. There remains only to give an account of the provisions for *protection for parties in certain cases.*

According to these provisions, no coercive measures i.e. blockade, boycott or similar measure, or such terminations of employment contracts which are made for the purpose of bringing pressure to bear on the other party or for the purpose of causing damage, may be taken against anyone because of religious, political or similar motives. Nor may such a measure be taken against anyone in order to prevent him from appearing before a court or before any other public authority, or from giving testimony, or from assisting a public officer. Nor is a coercive measure (direct action) allowed for

the purpose of retaliation against anyone because of his connection with the concluded labor controversy. Here the reference is, among other matters, persecution of strike-breakers. After the labor dispute has been settled, reprisals are forbidden against the one who was guilty of strike-breaking. The prohibition in the basic agreement against coercive measures includes finally a measure that is taken against family enterprises—enterprises that are carried out without help other than husband or wife, children or parents—or against an employer to try to persuade him not to share in the work in his own enterprise.

An unusually significant provision is the one that states that no coercive measure may be taken for the purpose of seeking unjustifiable favors for oneself or for someone else by trying to have anyone pay out or refrain from wages. This provision shall, however, not prevent anyone from taking coercive measures for the purpose of securing payment from anyone who, after a debt having accrued, has acquired possession of an estate or an enterprise to which the debt is attached, provided he, at the time of acquiring possession, was aware of or in the circumstances had reason to be aware of the debt.

Here are meant so-called successor-blockades, that occur mainly within the building industry, where, because of the employers' insolvence, it often becomes necessary for the workers to protect their wage-claims

against the one who has taken over such an employer's building enterprise.

It is the duty of the Labor Market Board to take up disputes or controversies for investigation and settlement regarding the validity or the correct meaning of these provisions. Here the independent chairman functions, who is appointed for three years, according to the basic agreement. The Labor Market Board, when controversies of this type are involved, as in the case of the right of the third party to neutrality or questions concerning coercive measures against strike-breakers, protective work etc., shall function as *a conciliation board*. The decisions which the board reaches on these matters shall also, without further action, be strictly observed.

Conclusion

A historical and systematic description has hereby been given of the development of the relations between employers and laborers in regard to their system of organization and their legal agreements, that has developed in Sweden since the latter part of the former century. In this development, the concluding of the basic agreement between the Swedish Employers' Federation and the Confederation of Trade Unions constitutes a link as remarkable as it is significant. This agreement is a seal on the equality, the mutual liking and respect that has during the last decades come more and more to characterise the relations between the

Swedish employers and laborers. It must be regarded as a logical development of the system of organization ereated with so much effort and care, since the aim has always been to achieve the best possible contact between the parties on the labor market, to make more secure their mutual relations, to equalize interests, and to take care of the equilibrium. The conclusion of this agreement has rightly been described as the victory of common sense over prejudice, conceit and distrust on both sides.

It is assumed that the basic agreement will be accepted by the organizations affiliated with the Swedish Employers' Federation and with the Confederation of Trade Unions before it becomes valid within their respective fields of activity. This will be carried out through voluntary agreements, by which is understood, that the agreement must not be made effective with the help of coercive measures.

As already stated, the agreement was concluded not the least to prevent legislative action in the labor market. The organized employers and workers are on the whole agreed that the system of organization and the development of the right of association and of legal labor rights is best served, if the parties on the labor market and their organizations themselves work to achieve a secure system of rights based on voluntary agreements, a democratic sense of responsibility and a regard for industrial and general welfare.

Basic Agreement between The Federation of Swedish Employers and the Confederation of Swedish Trade-Union

By the following agreement entered into between the Federation of Swedish Employers (Svenska Arbetsgivareföreningen) and the Confederation of Swedish Trade-Unions (Landsorganisationen i Sverige), the two organizations assume the obligation to perform the duties within the Labour Market Board and related duties allotted to each one under this Agreement, and to endeavour to have this Agreement voluntarily accepted as a collective agreement between their respective trade-federations. In so far as this being achieved, this Agreement shall also otherwise become legally binding for the Federation of Employers and The Confederation of Trade Unions under the existing law on Collective Contracts.

Chapter I.

The Labour Market Board

Article I.

For the handling of questions of general or otherwise of considerable importance to the labour market, the Federation of Employers and the Confederation of Trade Unions shall appoint a joint organ to be entitled The Labour Market Board.

The Labour Market Board shall consist of three members from each of the two organizations as well as a like number of deputy members from each.

The members and deputy members shall be appointed for a term of three years.

Article 2.

In accordance with this Basic Agreement, it shall rest with the Labour Market Board particularly to handle certain questions pertaining to the discharge or temporary dismissal (furlough) of workers (Chapter III) as well as questions pertaining to conflicts which affect functions essential to the general public and to Society as a whole (Chapter V).

In deliberations on questions pertaining to discharge or furlough, each party, moreover, shall be represented on the Board by a representative of the trade-federation concerned. Such a representative, as well as a deputy for him, shall be appointed by each federation for a term of three years.

Should a question of discharge or furlough concern more than one federation on either side, and if the question cannot conveniently be divided and handled separately for each federation, the federations involved shall endeavour to have one of the representatives represent them jointly as a member of the Board. If the federations cannot agree on a joint member, he shall be appointed by the Federation of Employers and the Confederation of Trade Unions, respectively.

Article 3.

In its capacity as a board of arbitration, the Board shall moreover take up for consideration and settle dis-

putes on the validity or correct interpretation of the provisions under Chapter IV concerning the limitation of measures of direct action, on whether a certain action would violate those provisions, and disputes on the legal consequences of an action alleged to have violated those provisions.

The Federation of Employers and the Confederation of Trade Unions shall jointly for a period of three years appoint an impartial Chairman of the Board to function, when called for by virtue of Article 4, in the handling of matters as referred to in the foregoing paragraph.

Article 4.

The Board may hand down a decision only when all its members are present.

The decision of the Board shall be the one supported by its majority. If in a matter as referred to in Article 3 no agreement can be reached by the majority, the impartial Chairman shall be summoned to participate in the deliberation and decision on the matter.

In the deliberations on a matter as referred to in Chapters III or V no members of the Board representing the Federation of Employers or the Confederation of Trade Unions must participate who is directly concerned in the matter or who is a director or official of any sub-organization concerned in the matter.

Article 5.

When handling matters particularly involving a cer-

tain trade or certain trades, the Board may summon a representative of the trade-federation concerned to participate in the handling of the matter before the Board but not to take part in the Board's decision; the Board may also summon the employer or workers involved, or a representative for them, to be heard by the Board.

Article 6.

One Secretary from each of the Federation of Employers and the Confederation of Trade Unions shall serve on the Board.

It shall rest with the Board with the least possible delay to take up for consideration and to decide on matters referred to it.

Minutes shall be kept of the meetings of the Board, and the minutes shall be signed and approved by both parties.

Chapter II.

Procedure of Negotiations, etc.

Article 1.

Should a dispute arise regarding working conditions or relations otherwise between the two parties, it must not cause resort to any actions as referred to in Articles 7 and 8 before any of the parties concerned has sought means of negotiations with the other party in the manner of the matter under dispute. It shall rest with any one party upon the request of the other party to enter into such negotiations.

Even when no negotiations have been brought about, a party shall be deemed as having filfilled his obligation to negotiate in accordance with the foregoing paragraph when negotiations have been impeded for reasons beyond his control, or when the other party disregarding his obligation to negotiate has resorted to direct action for settling the dispute.

With the exception of Article 8, point 4, the provisions of this Chapter shall not apply to the making or prolongation of collective wage contracts, nor to the resort to sympathetic actions or to the recovering of uncontestable wages or other compensations which have fallen due.

Provisions have been laid down in Chapters I, III, och V regarding special negotiations in certains disputes.

Record in the Minutes:

The provisions of Chapter II shall not apply in so far as the collective wage contracts stipulate other procedures of negotiation in specific matters, such as the regulation of piece work rates, etc.

Article 2.

If one party owing to certain circumstances desires to recover wages, damages, or any other compensation from the other party, and if for the settling of such a matter negotiations between the organizations are necessary, an appeal for such negotiations shall be made without undue delay.

If and in so far as the circumstances on which the claim is based have been known, on the employer side to the employer in question or to his organization, or on the labour side to the respective trade-federation or local organization for more than four months without negotiations having been requested in accordance with the provisions of this Chapter, the party shall thereafter have forfeited his right to demand negotiations regarding the claim. Notwithstanding such knowledge of the circumstances, the right to demand negotiations shall be deemed forfeited if and in so far as the circumstances are of more than two years' standing.

Record in the Minutes:

1) What is prescribed in the first paragraph of Article 2 does not aim at limiting the employement of direct negotiations between the employer and workers concerned for the purpose of settling a controversy.

2) As regards the forfeiture of the right to negotiations concerning claims resulting from piece work, the final piece work payment shall be regarded as "the circumstances on which the claim is based".

Article 3.

Negotiations in accordance with this Chapter shall in the first place be conducted between the parties directly concerned at the place of work under participation by the local organization wherever such exists (local negotiations).

Local negotiations shall commence as soon as possible and not later than two weeks from the day when they

were requested, unless the parties have agreed on a postponement.

When called for by the nature of the controversy or by other special circumstances, negotiations may, upon the request of the appropriate trade-federation, be taken up directly between the federations in the manner as prescribed in Article 5.

Record in the Minutes:

By a local organization is understood an organization in relation to which the federation by virtue of statutes or practices constitutes the next higher instance for negotiations, such as a federation section, a shop club, or the like.

Article 4.

If an agreement cannot be reached through local negotiations, it shall rest with the party which desires to pursue the matter to refer the matter to negotiations between the respective trade-federations (central negotiations). A request for such negotiations shall be made by the federation of which the party is a member to the corresponding federation of the other side not later than two months from the day the local negotiations in accordance with Article 9 shall be deemed as having been concluded.

Article 5.

Central negotiations shall commence as soon as possible and not later than three weeks from the day they were called for, unless the parties have agreed on a postponement.

Article 6.

Negotiations shall be conducted with all the necessary haste, and minutes shall be kept which shall be approved and signed by both parties.

Article 7.

In a question of interpretation or application of a collective contract or in any other dispute which, by virtue of Article 11 of the Law on the Labour Court, should be decided by the Labour Court or by an arbitrator, no party must appeal for such a decision before having fulfilled his obligation to negotiate in the matter.

If a party, following negotiations, desires to place a matter as referred to in Article 2, the first paragraph, before the Labour Court or an arbitrator for ultimate decision, this may be done by applying to the Labour Court for a summons to be served or by applying to the other party for arbitration not later than three months from the day the negotiations in accordance with Article 9 shall be deemed as having been concluded. Should any party neglect to do so, he shall have forfeited his right to appeal.

What is thus prescribed concerning the forfeiture of the right to appeal shall likewise apply to a party who by virtue of Article 2 has forfeited his right to negotiations in the matter.

Article 8.

Strikes, lock-outs, blockades, boycotts, or any other similar form of direct actions—even if permissible by

law or collective contract—must not be resorted to because of any certain dispute.

1. by a party who has forfeited his right to negotiate in the matter;

2. by a party before he has fulfilled his obligation to negotiate;

3. unless, following negotiations, a written notice of the contemplated action is served on the respective trade-federation of the other side not later than three months from the day the negotiations by virtue of Article 9 shall be deemed as having been concluded;

4. without the action having been decided or approved by the respective trade-federation.

Article 9.

As the day for concluding negotiations shall be deemed that day when the parties, according to records in the minutes kept during the negotiations or according to other circumstances, have agreed to declare the negotiations concluded or, failing such an agreement, that day when one party has advised the other party in writing that he considers the negotiations as having been concluded.

Chapter III.

Disengagements and Furloughs

Article 1.

The right due to the parties to an employment contract, concluded for an indefinite period, to cause such a contract to be cancelled upon notice shall in the rela-

tionship between employers and workers joined in trade-federations which between themselves have adopted this Basic Agreement be exercised in the manner prescribed below.

Article 2.

When dismissing workers from an employment which has lasted for not less than a year, as well as when furloughing workers from such an employment, the employer shall advise the one amongst the workers designated to represent the labour organization concerned of the contemplated measure not later than a week prior to giving notice of discharge or furlough (advice of discharge, and advice of furlough). Should circumstances call for a reduction in the number of workers in less than the time prescribed for giving advice, and if this could not have been foreseen by the employer, advice shall be given as soon as possible.

Whenever requested by the employer or the representative of the labour organization, a meeting shall immediately be arranged between the two regarding the contemplated measure.

What is thus prescribed shall not apply

1. to a worker who has been signed on for a certain fixed time only, or for the time needed for completing a certain job;

2. when a worker is dismissed because of any such conduct on his part which entitles the employer immediately to revoke the employment contract;

3. to furloughs resulting from a fluctuating supply of work owing to the fact that the work is of seasonal character or otherwise not coherent as to its geenral nature;

4. to other furloughs when ordered for a certain fixed time not exceeding three weeks or when otherwise circumstances indicate that the furlough will not last for more than three weeks.

As soon as the workers have appointed a representative as prescribed in the first paragraph information to his effect shall be communicated to the employer.

Record in the Minutes:

1) A continous reduction in the working hours shall not be applicable to furloughs as specified in Article 2, the first paragraph.

2) If a worker as specified in Article 2, the third paragraph, point 1, continues his work indefinitely after the lapse of the employment period agreed upon, consideration shall likewise be taken to that time of work when applying the provisions contained in the first paragraph.

3) The individual trade-federations shall be at liberty, when adopting the Basic Agreement, to state under which conditions workers empleyed in work as specified in Article 2, the third paragraph, point 3, are to be considered as being continously employed and to what extent any possible stoppage of work may be considered as furlough as prescribed under the said point 3.

4) If after such furlough as referred to in Article 2, the third paragraph, point 4, the period of furlough has been extended, the application of Article 2 shall calculate with the total length of the furlough.

5) The provisions of Article 2 do not bear upon any limitation in existing actually recognized rights to negotiate in matters pertaining to discharging or furloughing workers having been employed for less than a year.

Article 3.

If notice of discharge or furlough has been served in such instances to which Article 2 shall apply, and if the workers demand negotiations because of the measure taken, the matter shall be referred to the workers' trade-federation board, unless the matter involves violation of the right to organize or the measure is otherwise unlawful or contrary to a collective contract; the trade-federation board, in turn, if it finds reason to do so, may refer the matter to the Labour Market Board for investigation in the manner prescribed below.

What is thus prescribed shall apply also in instances where the dismissal is founded on such a conduct which entitles the employer immediately to revoke the employment contract.

Article 4.

The Labour Market Board, by a careful investigation in all matters referred to it, shall endeavour to acquire a reasonably true opinion of all the circumstances under which the measure in question was taken. When judging the measure, consideration shall be given both to the dependence of production on the skill and suitability of the labour employed and to the workers' justified demand for security in employment. Accordingly, consideration shall be given to the necessity for the om-

ployer to be served by efficient and for his activities suitable workers, as well as, when the employer owing to lack of work has seen fit to dismiss or furlough workers and the choice is between workers of similar skill and suitability, to the length of employment of each worker and to any particularly heavy sustenance obligation on the part of any worker.

The Board shall seek to arrive at a unanimous opinion in its judgment on problems referred to it and to devise means for bringing about an understanding between the parties. A decision agreed upon by the majority of the Board shall be communicated to the trade-federations concerned, on which it shall rest, in collaboration with the Federation of Employers and the Confederation of Trade-Unions, respectively, to take the measures which may be called for by the decision.

Record in the Minutes:

The parties are agreed that in the ultimate instance it shall rest with the appropriate trade-federation to decide on the extent and nature of the measures which, at a result of a decision handed down by the Labour Market Board, may be considered for settling a dispute.

Article 5.

Should workers give notice to quit their work to such an extent or in such a manner as to cause the employer inconvenience with respect to necessary labour, and when there is no question of a masked strike or other such direct action, the employer may call the matter to the attention of his trade-federation, the board of which

may thereupon refer the matter to The Labour Market Board for its consideration.

What is prescribed in Article 4, the second paragraph, shall apply also to matters referred to above.

Chapter IV.

Limitation of Strikes, Lock-outs, and Other Direct Actions

Article 1.

No direct action, whether open or secret, must be resorted to by any party on either side in the instances and under the conditions set down in this Chapter, and it shall rest with any and all organizations bound to this Basic Agreement to endeavour to prevent their sub-organizations and individual members from resorting to such actions and, if an action has already been resorted to, to endeavour to have it lifted.

By *direct actions* are understood in this connection strikes, lock-outs, blockades, boycott, or other similar actions, as well as such terminations of employment contracts which are made for the purpose of bringing pressure to bear on the other party or for the purpose of causing damage to him.

By *direct actions against the other party* are understood actions which, for the purpose of bringing about a settlement in a dispute, are directed against anyone being a party to the dispute, or which otherwise are taken against the other party for direct and immediate purposes.

By *direct actions against a third party* (secondary

actions) are understood actions which during a dispute are directed against anyone who is not a party to the dispute, for the purpose in favour of the one party to the dispute of exerting pressure on the other party.

If a violation of a contract or trespassing against any organization statutes should be legally denounced, this shall not be considered a direct action unless otherwise prescribed below.

What is prescribed in this Chapter shall apply as between the parties to this Basic Agreement also with respect to an action against anyone who is not a member of an organization adhering to this Agreement.

Article 2.

No action must be taken against anyone for the purpose of persecution for religious, political, or other such motives.

Article 3.

No action must be taken against anyone for the purpose of preventing him from appearing before a court or before any other public authority, or from giving testimony, or from assisting a public officer, nor for the purpose of retaliation for what he might have done in such respects.

Article 4.

After a labour dispute has been settled, no retaliatory action must be taken either against anyone who has been a party to the dispute or against anyone else because of his connection with the dispute.

Article 5.

No action must be taken because of a dispute concerning labour matters against anyone who without the assistance of anyone except his wife, his children, or his parents, is performing a trade or doing work for his own account. Nor must an action be taken against anyone who is doing work on his own accord, if the purpose of the action is to cause him to give up his work in favour of someone else.

Record in the Minutes:

When applying the provisions of Article 5, the second sentence, to a partner in a firm or unincorporated company, decisive attention shall be devoted to the true character of the company, and the mere use of this form of company shall thus not in itself be deemed sufficient for applying this provision to each partner; if it may reasonably be expected that the company was established primarily for the purpose of formally avoiding employment consequences and that some partner or partners are thus in reality to be regarded as being employed, no protection under these provisions may be appealed for by the latter.

Article 6.

No direct action must be taken for the purpose of seeking unjustifiable favours for oneself or for someone else by trying to have anyone pay out or refrain from wages or do any other such thing.

What is thus prescribed shall not prevent anyone from resorting to direct action for the purpose of securing payment from anyone who, after a debt having accrued, has acquired possession of an estate or an enter-

prise to which the debt is attached, provided he, at the time of acquiring possession, was aware of or in the circumstances had reason to be aware of the debt.

Article 7.

In those instances where direct actions against the other party are prohibited by virtue of Articles 2—6 of this Chapter, and of Article 8 of Chapter II, or otherwise by virtue of collective contracts or law, actions must neither be directed against a third party.

Article 8.

Even if direct actions against the other party are permissible, actions must not, with the exceptions set down in Articles 9 and 10, be directed against a third party

1. in disputes pertaining to the entering into collective contracts;

2. in disputes pertaining to the entering into or application of individual employment contracts;

3. in competitive disputes regarding prospective jobs;

4. in order to induce a party to join or to prevent him from withdrawing from a trade organization.

Article 9.

The protection of a third party prescribed in Article 8 shall only be due to the one who remains neutral in the dispute.

As an unneutral third party shall be regarded:

1. a member f an organization involved in the dispute if, otherwise than by performing protective work, he

has to the benefit of the opposing party disregarded such obligations to the organization the fulfillment of which does not violate the provisions of this Chapter;

2. anyone who during a dispute has performed work blockaded because of the dispute, other than protective work; unless the blockade should violate the provisions of this Chapter or the statutes of the trade-organization concerned;

3. anyone who for work, other than protective work, has during a dispute employed workers who because of the dispute have been blockaded by the employer party; unless the blockade should violate the provisions of this Chapter or the statutes of the trade-organization concerned;

4. anyone who during a dispute and for reason of the dispute has financially supported one of the parties or has assisted him by transforming or otherwise altering his own enterprise or activities;

5. anyone who has a controlling interest in a corporation involved in the dispute, or who is a joint owner without limited liability in a company involved in the dispute;

6. a corporation in which a party to the dispute owns shares, or a company in which a party to the dispute has a joint interest, provided the activities of the corporation or company, considering the amount of shares held or the extent of the joint-ownership as well as other circumstances, must be regarded as in reality being conducted for account of the party to the dispute.

As protective work shall be regarded such work which in the event of a conflict must be done for stopping the production in a technically reasonable way, as well as such work which is necessary for preventing danger to people or damage to buildings or other establishments, ships, machinery, or live-stock, or damage to such stocks of commodities which during the conflict are not employed for maintaining the production of the enterprise or for sale to a greater extent than required for preventing any deterioration or destruction which the goods may be subjected to owing to their nature.

As equal to protective work shall be regarded the work which anyone may be required to perform by virtue of special provisions under existing law, as well as work the neglect of which may constitute breach of official duty.

Record in the Minutes:

When setting down the provisions regarding protective work, the parties have assumed:

that a more definite explanation of the meaning of protective work within different spheres of activity shall be made in agreement between the respective trade-federations; and

that wherever an enterprise is not carrying on production during a conflict ,the ordinariy workers, when required, shall take upon themselves to carry out this work.

Article 10.

Notwithstanding the provisions of Article 8, point 1, direct action may be taken provided its purpose is, by means of extending the scope of an original dispute re-

garding the establishment of a collective contract, to assist a party to it. Such an action must not involve anything but strikes or lock-outs and subsequent labour blockades, as well as refusal to handle goods which are intended for or emanate from an enterprise conducted by a party to the original dispute.

Chapter V.

Handling of Conflicts Involving Functions Essential to Society

Article 1.

In order in so far as possible to prevent labour conflicts from disturbing functions essential to Society, the Federation of Employers and the Confederation of Trade Unions shall jointly take up for prompt consideration any conflict situation where protection of any public interest is called for either by any of the two organizations or by a public authority or by any similar body representing the public interest in question.

Article 2.

Deliberations on questions of preventing, limiting or removing labour conflicts referred to in Article 1 shall be made by the Labour Market Board.

Article 3.

If in the handling of a matter as referred to in Article 2 a majority has been won in favour of preventing or removing a conflict, wholly or partly, and in favour

of a necessary regulation of the working conditions connected therewith, it shall rest with the Federation of Employers and the Confederation of Trade Unions, each on its side, immediately to take the requisite measures for bringing about a settlement between the parties concerned.

Whenever this Basic Agreement is adopted among trade-federations on both sides, it shall be accepted as being legally valid for the present under the Law on Collective Contracts, the period for giving notice of its cancellation to be six months; however, if a collective wage contract between the parties should remain in effect at the time this Basic Agreement should be made to terminate upon due notice having been served, the Basic Agreement shall cease to be valid only concurrently with the termination of the wage contract.

Stockholm, December 20, 1938.

THE FEDERATION OF SWEDISH EMPLOYERS:	THE CONFEDERATION OF SWEDISH TRADE UNIONS:
J. Sigfrid Edström	*Aug. Lindberg*
Gustaf Söderlund	*Gunnar Andersson*
Carl Joh. Malmros	*Oscar Karlén*
Wiking Johnsson	*Hilding Molander*
Ivar O. Larson	*Johan Larsson*
Axel Bergengren	
/Nils Holmström	*/Arnold Sölvén*

The Labour Market Committee's General Grounds for The Bacic Agreement

In the spring of 1936 the Federation of Swedish Employers and the Confederation of Swedish Trade Unions appointed delegates for a joint investigation of certain labour market problems of a more general nature. Since then the delegates, who assumed the name of The Labour Market Committee, have at a number of meetings taken stock of all those problems which were considered mature for organized regulation, and in this connection they have studied the possibilities of bringing about such a regulation. Although the Committee has not yet concluded its consideration of all the problems brought to light by its investigation, it has nevertheless deemed it appropriate to present to the two parent organizations concerned those results of its negotiations on which full agreement has been reached. The Committee thus recommends certain regulations for approval, in the form of a Basic Agreement to be entered into between the Federation of Employers and the Confederation of Trade Unions, aiming at (1) the establishment of a permanent organ for negotiations between the two parent organizations; (2) a uniform system of negotiations to settle labour disputes; (3) the establishment of a general practice to be followed with respect to dismissals and furloughs; (4) the abolishment of certain direct actions; and (5) the adoption of a system for dealing with labour conflicts touching upon functions essential to Society.

In view of the nature and extent of the controversies asserting themselves from time to time in the labour market, the solution of the pertinent problems is of substantial importance not only to the parties immediately concerned but to other sections of Society as well. This importance is becoming increasingly evident in so far as the extent of organized labour and collective bargaining is growing; and it is reflected, among other things, by the great public attention devoted in recent years to open conflicts in the labour market as well as by the repeated demands for State interference which in different connections have been raised looking toward a limitation of labour contests and an extension of the public control of these contests.

These demands have been considered particularly justified in view of certain extensive labour conflicts and their adverse influence on the economic life of the country as a whole. Moreover, it has been maintained that certain labour conflicts were of a nature to obstruct functions essential to Society. Finally, it has been asserted that in the course of labour conflicts methods have been employed which in specific cases have brought about undue interference in the personal freedom of citizens, or have otherwise been unseemly.

The central organizations of the Swedish labour market do fully realize how important it is to have their disputes solved as far as possible without resort to open conflicts. It is of major interest to those gaining their income from industry and trade that work be allowed

to go on without disturbances; the losses resulting from open conflicts most directly affect the parties themselves. For this reason, their own organizations must naturally deem it to be their chief mission to seek to employ all possible means for settling disputes in a peaceful way; both parties also have some to realize that the results gained through an open conflict very rarely stand in proportion to the costs and other sacrifices connected with the conflict. The fact that the organizations themselves fully realize the responsibility they assume when resorting to open conflicts is believed to be evidenced by developments in the Swedish labour market in recent years. The guiding principle of the two parties has in this instance been to preserve undisturbed labour peace in view of its importance to industry and trade and to national economy.

Although the organizations are thus consciously aiming at a peaceful solution of labour market problems, disagreement between the parties cannot always be avoided. The economic losses resulting from a contest in such a situation are in themselves to be regretted, but they cannot be regarded as sufficiently important to justify the present freedom of collective bargaining being substituted by compulsory public control of divergencies in the labour market. Nor from other points of view should the State be justified—aside from the proper sphere of social welfare legislation—in forcing upon Swedish employers and workers a regulation of working conditions, either in general or in specific instances.

So long as the organizations in the labour market are prepared to look also to the general public interest involved in their activities, the measures reasonably called for in the interest of labour peace should most naturally and appropriately rest with the organizations themselves.

On the strength of these views the Labour Market Committee has concentrated its efforts on providing greater possibilities for a peaceful liquidation of labour conflicts, and on endeavouring to prevent direct actions that might be injurious to innocent parties or to Society. In this instance the Committee has deemed it requisite in the first place to make more effective existing methods of collective bargaining and of settlement between the parties, as well as to further a general release of tension in industrial relations.

Certain questions regulated by the present Basic Agreement are of a nature as to give to the consideration of them a character of one having regard rather to appropriateness and reasonableness, where the ultimate decision is primarily made to rest on a conciliation of conflicting interests. This is the case with questions concerning termination of employment contracts and furlough as well as concerning the dealing with conflicts touching upon functions essential to Society. The consideration of conflicting interests, which according to the Agreement, shall be made in such instances is not of a nature to leave it to the decision of a court of law. But also with respect to certain questions of a

purely legal aspect, it has been deemed less appropriate to appeal to a court for its decision on the interpretation and application of the Agreement. This applies to disputes touching upon the limitation of direct actions for which the present Agreement provides regulations.

For deliberating such problems the Agreement provides for the establishment of a special central organ, the Labour Market Board, in which both parties are to be equally represented (Chapter I). This Board is also given the additional authority of dealing with questions of a general or otherwise of greater importance to the labour market. The need for such a central organ for negotiations has increasingly asserted itself with the growth of the organization movement in the Swedish labour market.

The provisions for an established order of bargaining (Chapter II) aim at making more effective the procedure for dealing with the more common local disputes regarding the application of workings terms. In order to facilitate a peaceful settlement of such disputes a uniform procedure is proposed bearing upon local and central negotiations with respect to disputes whether provided for in existing collective contracts or not. Certain prescriptive regulations have been attached to this order of bargaining aiming at preventing a settlement of possible disputes from being unduly delayed, and aiming also at preventing the parties from vindicating claims long overdue which, for this reason, cannot always be adequately traced. Finally, the responsibility

for resort to open conflicts is made to rest on the respective trade-federations.

Among the labour market problems the regulation of which the Committee deems particularly important, the chief problem is the procedure and conditions for dismissing or furloughing workers. On this score, an agreement has been reached (Chapter III) regarding obligatory advice in advance and regarding negotiation procedure, together with certain general principles for deciding on such matters, all devised in consideration of the justified demand of workers for security in employment and in consideration of the dependence in industry on the skill and suitability of the labour employed.

In the activities conducted by trade organizations in the past for asserting their interests certain methods of direct action have sometimes been employed which cannot be considered appropriate or seemly to trade organizations of that maturity and strength which signifies the Swedish organizations. The Committee proposes certain regulations (Chapter IV) for discarding of such methods of dicert action, including the prohibition of those actions against a neutral third party which do not have the character of purely sympathetic measures connected with collective wage conflicts. Moreover, certain less attractive actions are prohibited against any party, such as persecution of anyone for religious, political, or similar reasons, attacks against anyone because of his activities as a party, representative, or witness appearing before a court or any other public

authority, or against anyone for his assisting a public officer or employer, retaliation upon anyone because of his participation in a labour dispute already settled, attacks against family enterprises, attacks on a private employer in order to induce him to refrain from taking an active part in manual work done on his own account, as well as direct actions aiming at securing undue profits. The pertinent regulations are substantially drafted on the basis of corresponding regulations contained in earlier proposals for official legislation on actions of labour contest.

When considering the question of labour conflicts said to be noxious to Society, the Committee has attempted to determine the need for special measures to prevent such activities from being disturbed which provide the people with essential utilities, social care, and the like. Public discusion on this score has been very diverse as to how one should most properly determine and limit those fields of activity which considering their particular importance to Society ought to be protected agains labour conflicts. The Committee is of the opinion that no nearly satisfactory demarcation of such fields could be brought about claiming objectiveness and general recognition. Already the fact that the interests of Society are always dependent on the extent of any particular labour conflict makes such a prefixed demarcation impossible. Any certain activity is rarely in itself as fundamentally essential to Society as to call for protection against any and all labour conflicts. On

the other hand a conflict, which in itself is by no means directed against any functions particularly essential to Society, may yet by its very existence to a certain limited extent impede or even prevent activities which are essential for providing the general public with safety as to life or health.

Consequently, since the need for preventing or limiting any certain conflict is directly dependent on the circumstances prevailing in each case, no other solution appears to offer itself than to permit a mutual consideration of opposing interests in each individual conflict, with due regard to be given also to the interests of Society as a whole. A review of the open labour conflicts which have occurred in Sweden in the past goes to prove that one cannot reasonably charge anyone of the parties in the labour market with having in their internal labour disputes disregarded the interests truly essential to Society. On the contrary, the organizations on either side have consciously endeavoured to prevent their disputes from conflicting with these interests. Nevertheless, and in order to establish more favourable conditions for efforts of this nature, the Committee proposes a more definite formula for deliberations on pertinent questions witht the view to preventing labour conflicts from disturbing functions essential to Society. In this connection, the Committee suggests the Labour Market Board as being the most suitable forum for deciding on such questions (Chapter V).

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THAT SWEDISH BUDGET

by

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and

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The Financial Policy During Depression and Boom

By Ernst Wigforss.

Ernst Wigforss, Ph.D., has since the fall of 1936 been Swedish Minister of Finance. From 1908 to 1918 he held various teaching positions in colleges at Lund and Gothenburg. He was a member of the Senate from 1919 to 1928 and has been a member of the Second Chamber since 1929. In 1924 he became a consulting cabinet member. Since 1925 he has been Minister of Finance for varying periods. He has been a member of the directorate of the Social Democratic party since 1920, and of its Executive Committee since 1928. He is the author of many works on Swedish philology and in the fields of economics, industrial democracy, and social philosophy.

As background for a description of Swedish financial policy during the last depression and the subsequent recovery, it is appropriate to consider certain data covering the size and arrangement of the Swedish budget. For a long time the state's revenues and disbursements have been increasing rapidly and without interruption. While the actual expenditures of the year 1900 amounted to 130,000,000 kr. and in the year just prior to the World War amounted to somewhat more than 200,000,000 kr., the expenditures of the years from 1926 to 1930 rose to an average of about 700,000,000 kr., and for the present budget year of 1937—1938 approach 1,500,000,000 kr. Changes in the value of money are responsible for only a minor part of these increases. Wholesale prices rose from a level of 100 in 1913 to an average of 137 in 1937. But even if one adjusts the figures to the same real value by means of an index for the cost of living—the index being 165 for the final quarter of 1937 as compared with 100 for the year 1914—then in comparison with the expenses of 1,150,000,000 kr. in 1937—1938, the amount in 1914 would be only 380,000,000 kr.

A pronounced rise in the income of the entire economy

serves to explain this development in the national budget.[1] Unfortunately, all calculations of the national income contain some uncertainties. A recently completed estimate, based upon statistical data for production, results in a figure of about 2,000,000,000 kr. for the year 1900; 3,000,000,000 kr. for 1910; 7,300,000,000 for 1925; 8,300,000,000 for 1939; and—after a decline in 1932 and 1933 to 7,000,000,000 kr.—over 9,000,000,000 kr. in 1936. For the year 1937, the national income should prove to be higher by a considerable amount.

The figures derived by this method substantially exceed those obtained from annual assessed incomes for the country. The latter, for many different reasons, are certainly much too low. But since the estimates of the national income in different countries are often based only upon income assessment data, it is advisable when such sources are used in international comparisons to discount the figures that have been supplied above for Sweden. Professor Lindahl, who has directed the research leading to the estimates that have been given above for Sweden's national income, concludes that in such comparisons a reduction of 20 per cent should be made in the figures for Sweden that have been given above.

Sources of Income

The expenditure figures of the budget cannot without further qualification be taken as measuring the tax in-

[1] The population of Sweden increased from 5,100,000 in 1900 to 5,500,000 in 1910; 5,900,000 in 1920; 6,100,000 in 1930; and 6,300,000 in 1936.

come. In addition to tax receipts, the government has significant sources of income from business activities such as railroads, the postal service, telephones, hydro-electric power stations, forests, capital investments in loan funds and in stocks, and different types of fees and charges. In the budget for 1937—1938 the total available income is placed at 1,142,000,000 kr.; of that amount 875,000,000 kr. represents taxes upon income, property or wealth, and upon consumption, while 158,000,000 kr. consists of revenues from productive investments, and 109,000,000 kr. represents the yield from fees, miscellaneous charges, and so forth. If an estimate is desired covering the portion of the income of the people represented by the general burden of taxation, one must therefore make substantial deductions from the aggregate income of the government. On the other hand, in making such an estimate one must not forget the important taxes paid to the municipality, the county, and the road district. If these in the years before the war amounted to about 125,000,000 kr and now can be estimated at about 450,000,000, the aggregate taxation in the years just before the World War would have to be raised to about 330,000,000 kr., and in the year 1937 it would have exceeded 1,300,000,000 kr. In relation to the national income figures—reduced by 20 per cent—for the same years, i.e., about 2,400,000,000 and 7,000,000,000 to 8,000,000,000 kr. respectively in the years just prior to the war and in 1937, the combined taxes amounted in the earlier period to somewhat less than 14 per cent,

and in the latter period to about 16 to 18 per cent, of the annual national income.

The Public Debt

While the Swedish national budget can draw on important sources of income from different types of productive investments, one must, on the other hand, consider the fact that considerable sums are expended as interest on public loans. The growth of the public debt can be illustrated with a few figures. The total in 1900 was 343,000,000 kr., which by 1910 had risen to 543,000,000, by 1930 to 1,805,000,000, and by 1937 to 2,237,000,000 kr. Interest on the public debt has not constituted any burden on taxpayers, since it has been entirely covered by the interest derived from productive investments. Even during the difficult years of the depression, the income from the state's productive investments was greater than the interest payments upon the public debt, and in good years the surplus has been substantial.

That the Swedish nation has not been burdened with any public debt incurred for unproductive purposes is due, of course, to several causes, foremost among which is the fact that the country has not been involved in war for over a hundred years. The tradition that borrowing should be resorted to only for productive purposes, in the business sense of this term, and that sound public finance required that each year's current expenditures should

TABLE 1

Fiscal Year	Income Derived from Productive Investments (Million kr.)	Interest Paid on the Public Debt (Million kr.)
1929—30	148	86
1930—31	144	82
1931—32	102	81
1932—33	94	91
1933—34	106	99
1934—35	140	97
1935—36	152	94
1936—37	190	91

be covered by the actual income for that year, was therefore firmly established. An occasional deficit resulting from errors of estimate of either income or expense has for twenty-five years past been covered out of a reserve fund to which unanticipated surplus has been credited. Therefore, no automatic transfer of surplus to the retirement of the public debt occurred, and until the reorganization completed this year by the government, the guiding principle has been that income and expense items be precisely balanced. For the purpose of covering deficits resulting from the states's activities and for debt payments, specific amounts were provided on the expense side of the state budget.

For a long time the only sound fiscal policy was considered one in which each year a balance existed between total income and expenses. This policy was abandoned during the recent depression period, simultaneously with

the rise of new conceptions of the influence which the state can exert upon economic change by means of its financial policy. It is not entirely an easy matter for one who has taken an active part in the theoretical discussions and the political struggles over these questions in the last decade to give an objective description of the different points of view or of the course of events. But with this warning to the reader, I shall try to do so.

Yearly Balancing of Budget

More or less unavoidably the principle of balancing the budget in each year forces the finances of the state to reflect fluctuations in private industry. The main income sources of the state consist of taxes either upon income and property or upon consumption, and it is obvious that their yield varies directly with the volume of private business. Consequently, during a period of cyclical decline it is necessary to diminish public expenditures to the extent that the decline in incomes is not compensated for by increased taxes. A combination of both measures is likely to be the ordinary result in practice, although a decrease in public expenditures without doubt appears as the best way to those who hold to the financial policy under consideration. As a matter of fact, one may venture to say that this point of view rather strongly assumes that public expenditures are a "burden upon the economic life" or even upon "society", partly unavoidable to be sure, but

fundamentally undesirable. Therefore, a priori, an instinctive sympathy is shown toward a government policy to reduce these expenditures.

This attitude, the historical origin of which need not be inquired into at this time, can in reality prove to be full of contradictions. In Sweden, the conception of government spending as a "burden" has in circles with pacifistic tendencies often been related to appropriations for defense purposes, while other groups, with equal sympathy for "thrift," have been accustomed to make an exception for military provisions as being vitally necessary. The latter group instead has often cited the "social expenditures" as the classical example of a burdensome outlay.

This somewhat abstract predilection for economy in public expenditures has become a natural element in the common belief that a business depression can be overcome primarily only by a reduction of costs and expenses generally. It is natural that in view of these attitudes an increase in taxation is hardly considered desirable, inasmuch as the burden is thereby increased. To some degree, however, this drawback is offset by a certain preference for strong measures in treating the sick social organism. Just as a crisis is sometimes considered a necessity and in a sense a just consequence of the excesses of a boom, more severe taxation is included in the normal curative methods.

The experience of different countries and different periods testifies to the difficulties of substantially re-

ducing public expenditures from a previous high level. In a public economy with a rising long-run trend of development, it is therefore to be expected that public expenditures will expand during the ascending phase of the cycle and that depressions are marked more by an interruption of the rise than by a downward turn. The sharp crisis at the end of the World War, i.e., in 1920—1922, certainly was followed by a most important reduction in the Swedish budget, but this was entirely the result of the sharp fall in the price level after a period of inflation. Taking expenses in 1913 as being about 210,000,000 kr., rising close to 1,000,000,000 in 1920, and in 1923—1924 going down to 620,000,000 expressed in constant purchasing power, this reflects a rise of more than 70 per cent in the budget outlays for the period from 1913 to 1923. The rising tax income during the inflation years, further increased by supplementary income taxes and a war profits tax, resulted in a large surplus that was used to finance the budget expenses during the depression years. This surplus, amounting to more than 350,000,000 kr., was included with income in the budgets for 1921 to 1923.

Use of Surplus

This situation, that a surplus from earlier financial operations, held in a cash fund or in some other way, could be considered as available on the income side in a later budget without the latter's being clearly considered

as unbalanced, has played a part in the dispute over financial policy during the recent crisis and depression. The latter half of the decade of 1920 was distinguished by a pronounced upswing in Sweden. The income of the state rose sharply. Since a reduction in the expenditures for defense occurred at the same time, and since the character of the balance of power in the Riksdag hindered expensive social reforms, one could depend upon a substantial surplus of income over expenses.

This situation was in part utilized to effect a reduction in taxation. Taxes on income and property were reduced, the sugar tax was repealed, and the tariff on coffee and certain other revenue tariffs were reduced. On the other hand, alcohol taxes were maintained at the previously increased rates even though their yield, because of the temperance movement, contributed only partially to the financing of the budget.

The surplus was consolidated, and with the outbreak of the new crisis—i.e., in 1930—there had accumulated a significant fund available to the government. Since even according to the traditional principles of finance it was considered permissible to use these resources either directly on the income side of the budget or to cover an unexpected deficit, higher tax rates could be avoided at first. Yet, a reduction of expenses did not occur, but instead an unavoidable expansion, owing to the need of assisting those who suffered from the effects of the economic depression. As a result, the actual expenses increased from 702,000,000 kr. in the fiscal year 1929—

1930 and 733,000,000 in 1930—1931—even though the depression had still but slightly influenced the Swedish economy—to 765,000,000 kr. in 1931—1932 and 801,000,000 in 1932—1933. Since the available income—out of which were provided the aforementioned expenses and which had to cover certain regular charge-offs—simultaneously declined from 778,000,000 and 782,000,000 kr. in 1929—1930 and 1930—1931 to 736,000,000 in 1931—1932 and 740,000,000 in 1932—1933, capital resources or funds had to be used to supply the deficit in current income. The combined amounts of the savings so exhausted amounted in the last two budget years mentioned to almost 175,000,000 kr. Nevertheless, by the spring of 1932 increases took place in tax rates on income and property and on tobacco and alcohol, and certain revenue tariffs were raised.

It should perhaps be observed that the expenditure figures of the budget for 1932—1933 reached the amounts given above as a result of supplementary appropriations voted in the beginning of the year 1933, since the Riksdag, as a result of the election in the fall of 1932, had to some extent been changed in its composition and a new government had come into power with "expansion" as its economic program.

Curtailment or Expansion?

During the first years of the depression the struggles of opinion as to the correct depression policy had grown harder and harder as the depression deepened and the

demand from the public for more comprehensive measures gained power. These struggles involved the choice of measures to cope with unemployment. Should special so-called "reserve works projects," be used or projects in the open market at current wages? On this question more details are given in an article on the unemployment policy by the Minister of Social Affairs, G. Möller. Underlying these struggles were deep differences of opinion with respect to the purpose of government intervention, its extent, and its possibilities for affecting the economic situation. Some conception of the ideas on this matter that prevailed in Sweden as well as in many other countries may be gained, of course, by examining the views with respect to depression policy held by the supporters of "thrift and reduction of expenditures" on the one hand, and on the other hand by the supporters of "expansion and maintained purchasing power." This division of opinion has been clearly evident during all of the past years and has colored most debates. Nothing has been more common in economic and political discussions than to hear the demand for cost reduction and more economy countered by a stressing of the importance of demand and purchasing power. But this has not meant that the "expansionist policy" of the one side has met a common front of "deflationists." The situation has been rather muddled, and clashing views have developed within the different political parties.

It may be of interest to see how these contrary views

crystallized during the struggles of interests and ideas, little by little created the "new financial policy" that, during the latter part of the depression and during recovery, won the support of a significant majority within the Riksdag and of the general public. Before the election of 1932 and at the beginning of the legislative session early in 1933, there was a majority in the Riksdag consisting of conservatives, liberals, and members of the farmer party, convinced that the budget should be balanced according to the traditional method and that for this reason the plans of the labor party for large public works, financed by borrowing, should be defeated. Belief in "economy" as the means of escape from the crisis seemed unshaken. As late as the fall of 1931, the liberal government had urged the communes of the country to postpone all except absolutely essential projects, and even the business departments of the national administration were urged to be cautious in making capital investments.

The political majority was not unfamiliar with the fact that the growing unemployment made measures of assistance necessary. Since in Sweden—which did not have a program of unemployment insurance—the dole had been considered for a long time to be very undesirable, reserve projects had become the principal means of the unemployment policy. But these projects were not considered as a means of maintaining demand and thereby influencing the economic position. It was not considered that their extent should be greater than necessary for the alleviation of the most pressing needs, and wages

were to be held low enough so that they would not prevent the downward adjustment of wages in the open market which was considered unavoidable.

The labor party instead wanted an expansion of public capital investments, in the hope or expectation of creating a substitute for stagnating private enterprise. Its proposals touched both income-yielding state enterprises and the nonincome-producing ones, such as public buildings, schools, hospitals, scientific institutions, water and sewage disposal plants, highways, bridges and harbors, reforestation and silviculture, drainage, and so forth. In addition, the government was urged to expand its activity by a more vigorous promotion of a house-construction program, the improvement of dwellings, home ownership, and so forth.

Against these proposals the supporters of traditional financial policy advanced a series of arguments that in brief may be summarized as claiming that the resources of the country would be wasted, individual business enterprises would be deprived of capital neceessary for their development, interest rates would rise, the state's finances would be undermined by increased debt, and confidence in the business community would be lost. Instead of a decline in unemployment, the net result would be a worse crisis and increased unemployment. Even if a turn in the cycle should occur for other reasons, public activity, it was claimed, could never again be reduced; the end result would be a widening of the "socialized sector" in the economic life.

The Monetary Policy

The seemingly unbridgeable gap between the two positions was, however, not entirely without bridges. One was constructed by the monetary policy, the other by the agricultural policy. With the abandonment of the gold standard in the fall of 1931, public opinion, dominated by fear of an unlimited inflation, entirely supported the program of the Riksbank to maintain unchanged the purchasing power of the consumer's krona. It soon became clear, however, that the threat of danger did not come from inflation but from a continued deflation. Indeed, the price level continued to fall in spite of the increase in import prices as the result of exchange depreciation. This phase of the downward adjustment was considered by the farmers as a threat against their standard of living and the very life of agriculture. The sharp increase in the discount rate that took place in connection with the abandonment of the gold standard had already caused strong discontent in agricultural circles. The continued price fall meant a continued real increase in the debt burden, and the outlook for a new equilibrium between prices and costs at a lower level through a reduction in wages and prices within other branches of industry seemed too remote and illusory. The sympathies for a reflation policy were consequently not limited to the parliamentary opposition, which, of course, desired an expansionist financial policy.

On the contrary, one could observe a certain hesi-

tancy within this opposition to accept the consequences of its demands for public works, credit expansion, and increased purchasing power with regard to a general increase in the price level. This may be explained chiefly by the fact that the labor party for a long time represented the interest of consumers against the demand of different producers' groups for price-raising measures. This hesitancy disappeared relatively quickly, however, and as early as 1932 it was chiefly the labor party in the Riksdag that took the lead in the formulation of a careful reflation program. Since this bridged the gap for numerous elements within the majority, the labor party was able to initiate a more effective criticism against a deflationary economy program and to put forward its own plans for public works and financing by borrowing as the necessary instruments of a reflationary monetary policy.

The Agricultural Policy

The second bridge was built by the agricultural policy. This policy from the beginning aimed to maintain or increase the price level for agricultural products. Here too, the labor party at first represented the consumers' unwillingness to give up the benefits of low prices for foodstuffs. However, as it became increasingly clear that the price level for agricultural products must be considered as unduly low and that the lessened purchasing power of the agricultural classes could

not but result in unfavorable influences upon demand in the rest of the economy, there occurred a change in the labor party's attitude toward the policy of controlling agricultural prices. The farmers, on their part, were forced more and more to consider as an essential factor the purchasing power within the labor groups when the moment arrived for the practical realization of the agricultural program. From this position it was a short step to the conviction that a policy of increased purchasing power from the point of view of the general public presumed credit expansion and the financing of public works by borrowing.

The agricultural policy itself had, for that matter, already compelled such financing by borrowing, in that the storage of grain at a guaranteed price was achieved by means of short-term credits. These operations were obviously non-profit-yielding. From two directions, then, the principle of an annually balanced budget was being attacked—directly through the financing of the grain control and indirectly through the use of funds in actual demand—even before a frank and acknowledged deficit budget was inaugurated.

This was done by the Riksdag of 1933, when an agreement was reached between the government established by the labor party and the agricultural party. Even after the success of the labor party in the election of 1932, the Social Democrats and a few smaller labor groups did not have quite a majority in the Second Chamber of the Riksdag, while the considerable majority

in the Senate consisting of conservatives, liberals, and the members of the farmers party continued unchanged.

The import of this agreement may be briefly characterized by saying that the expansionist and reflationist policy was adopted not only with respect to unemployment policy but also with respect to agricultural policy. In this connection it was not overlooked that price improvement for agricultural products only partially could be included in the reflation program to increase purchasing power, since to a considerable extent this price improvement had to be effected through measures that did not imply an increase of production, but only a transfer of income from consumers to the producers of foodstuffs.

From this last point of view, it is correct to regard the agricultural policy as a form of social policy. This combination of social-political effort with monetary and fiscal policy has occurred, of course, in other fields as well, since, for example, housing improvements or other capital investments to control the depression have been to the direct advantage of certain groups, while charges for interest and amortization on loans incurred have been borne by the taxpayers in the customary manner.

Development of the Budget

Otherwise, the increases in state expenditure for social purposes have strongly influenced the development of the budget and have taken place after the effects of the

reflation policy were being felt, and on the basis of increases in the income of the government due to the economic recovery. This enlargement of government expenditures without relation to the business cycle policy, and of a more permanent character, should be emphasized, to avoid misunderstanding the causes that have contributed to the development of the Swedish budget. A picture of this development from and including the prosperous years of 1929—1930 and 1930—1931 up to the last fiscal year is given in the following tables. Table 2 contains the actual expenditures—those that have been covered or ordinarily should have been covered by taxes and similar types of income—divided into two classes: current expenditures and write-offs. In addition, there are entered expenditures for capital investments whether of productive or unproductive character.

TABLE 2—BUDGET POSITION (EXPENDITURES)
(Millions of kr.)

Fiscal Year	Current Expenditures	Write-Offs	Total	Capital Investments		
				Productive	Unproductive	Total
1929—30....	702.1	68.4	770.5	40.6	6.5	47.1
1930—31....	233.7	47.7	781.4	37.1	5.9	43.0
1931—32....	765.8	60.3	826.1	67.9	11.6	79.5
1932—33....	801.2	22.7	823.9	81.2	15.1	96.3
1933—34....	772.8	37.9	820.2	64.1	105.1	169.2
1934—35....	814.5	55.8	870.3	80.3	207.7	288.0
1935—36....	891.1	63.5	954.6	72.7	84.9	157.6
1936—37....	956.6	102.9	1,059.5	116.9	22.8	139.7
1937—38....	1,091.9	97.5	1,189.4	97.6	28.6	126.2
1938—39....	1,181.2	46.4	1,227.6	181.5	27.3	208.8

It is obvious that only to and including 1936—1937 do the figures reflect the actual results in these accounts, while for the year 1937—1938 the figures represent the accepted current budget, and for 1938—1939 the proposed budget. Since the division of the expenses given here is made in order to reveal different aspects of fiscal policy, it has seemed desirable to segregate the amounts for debt repayment, expenses of refunding or of debt consolidation, and write-offs in general. There are included in these amounts, however, certain capital investments which, it is considered, should be directly covered by tax receipts, and the measure of the activities of the state in different years is therefore secured by adding current expenditures and capital investments. The rise in expenditures during the depression years is more closely examined in the previously mentioned article by G. Möller, wherein an attempt is made to distinguish all grants that could be considered as works "appropriations."

If one takes the total amount of expenses of the budget with the exception of write-offs, one discovers that in the two years 1929—1931 combined, these amounted to 1,525,900,000 kr., and for the two years 1931—1933 to 1,742,800,000 kr., revealing an increase of 216,900,000 kr.; but if a comparison is made with the two years 1933—1935, when expenses rose to 2,044,000,000 kr., the increase is no less than 518,100,000 kr.

How the "new depression policy" found expression in increasing outlays for unproductive investment is quite

clear, but a word of explanation is needed with respect to the decline in current expenses for 1933—1934. When the policy of a deficit budget was first frankly adopted, an attempt was made to lessen objections by directing the use of loan funds towards clearly useful, though not (in the business sense) profitable, investments, while "current expenses for consumption purposes" continued to be covered entirely by actual receipts. This required the greatest possible reduction in the latter class of expenditures.

Still another point is revealed by the figures, namely, a lag in the use of depression grants. The decision to borrow for unproductive investment purposes is represented in the state budgets for 1933—1934 and 1934—1935 by amounts of 168,000,000 and 196,000,000 kr. respectively, while the disbursements extended into 1935—1936 though no new grants of this kind were made, the budget being again balanced.

In order to clarify the situation with regard to the balancing of the budget during these years, it is necessary to give a separate compilation which provides a comparison of actual income with all the expenses that, even with a balancing of the budget over several years, finally ought to be covered by that income, but which excludes debt retirement and funding, inasmuch as these actually result in a corresponding lessening of the need for borrowing. This compilation takes the form of Table 3.

If one adds that the budget year of 1937—1938 is

TABLE 3—Comparison of Income with Expenses, 1929—1939
(Millions of kr.)

Fiscal Year	Actual Income	Actual Expenses	Surplus + or Deficit —
1929—30	778.3	708.6	+ 69.7
1930—31	782.9	739.6	+ 43.3
1931—32	736.5	777.4	— 40.9
1932—33	741.0	816.3	— 75.3
1933—34	782.7	877.4	— 94.7
1934—35	902.9	1,022.2	— 119.3
1935—36	995.2	976.0	+ 19.2
1936—37	1,149.8	979.4	+ 170.4
1937—38	1,141.3	1,120.5	+ 20.8
1938—39	1,227.6	1,208.5	+ 19.1

estimated to produce a larger surplus than that given above, and that the figures for unproductive investment for the depression years 1933—1936 could be decreased by about 80,000,000 kr. since a part of these investments later were deemed productive, then one might say that the aggregate surpluses of 1935—1939 approximately correspond to the aggregate deficits of the four preceding depression years. Apprehensions that a policy of borrowing funds for unproductive expenses would increase the burden of the public debt and undermine confidence in the state's finances have thus proved groundless. Confidence on the part of savers and capital holders has not diminished. In fact, government bond issues have been sought after for investment purposes. Interest rates have not been forced up; they have, in spite of some fluctuations, shown a declining trend. The rate of interest applicable to new government bond borrowings in 1929 was

about 4.5 per cent, and in 1937 about 3 per cent. Treasury bills of three months maturity have been down to 0.33 per cent. Even the bonds of private concerns have been taken at declining rates of interest. The general economic position is given in more detail in another article in this series, and the development of unemployment is especially considered in the article by G. Möller.

Increased Taxes

To make the financial and budget position of the government clear, additional comments may be made on the figures of Table 3. The sharp rise in income during the years of recovery finds its basis partly in an increase in taxes. There was levied in 1932 a special or additional income tax, from which those in the smaller income brackets—up to 8,000 to 10,000 kr.—were exempt. Increased taxes were furthermore levied upon tobacco and alcohol, and certain revenue tariffs were raised. In 1933 the regular income tax was increased, as well as the alcohol taxes. In addition, inheritance tax rates were advanced. In 1934 a special tax was levied upon property. Finally, in 1936 there occurred an increase in the special or additional income tax in consequence of the decision to increase greatly the military appropriations. These increases during the worst years of the depression could not prevent a deficit budget, but during recovery they accelerated the increase in income and the liquidation of unproductive investments.

TABLE 4—TAX RECEIPTS, 1929–1939
(Millions of kr.)

Fiscal Year	Income and Property	Consumption	Motor Vehicle	Total
1929—30.....	209.7	335.6	44.3	589.6
1930—31.....	226.8	320.5	51.4	598.2
1931—32.....	214.7	321.5	58.8	595.0
1932—33.....	201.8	329.8	72.8	603.9
1933—34.....	193.2	344.2	78.5	615.9
1334—35.....	219.8	382.8	87.6	689.6
1935—36.....	247.6	416.0	96.8	760.4
1936—37.....	304.1	443.1	107.1	854.8
1937—38.....	322.1	446.5	106.0	874.6
1938—39.....	364.5	463.5	115.0	943.0

The trend of tax recipts, in addition, is presented in Table 4, in which income and property taxes, consumption taxes (i.e., tariffs and excise taxes), and motor vehicle taxes (constituting a special budget for the highway system) are given in detail.

If one excludes motor vehicle taxes, the rise in which is explained by the increase in tax rates in 1932, and in which the constant upward trend in yield is hardly affected by the depression, then taxes totaled 545,300,000 kr. in the year 1929—1930, and 828,000,000 in 1938—1939, revealing an increase of 282,700,000 kr. Taxes upon income and property then yielded an additional 154,700,000 kr., and consumption taxes an increase of 127,900,000. If the tax rates of 1938—1939 had been those that prevailed in 1929—1930, one can estimate that tax receipts would have been ap-

proximately 200,000,000 kr. less. The increase in the tax receipts over and above this amount of 200,000,000 kr.—i.e., more than 80,000,000 kr.—is explained by the greater yield that resulted from the increased tax base.

Use of Government Income

This increase in the income of the government has been used for an increase in expenditures that have no relation to the business cycle policy. For example, old age pensions have been improved by the acts of the Riksdag of 1935 and 1937. Children of widows and of the disabled have obtained "child allowances." Maternity allowances and blind pensions have been introduced. Housing for large families has been promoted by annual subsidies. Medical care and the care of alcohol addicts have required increased expenditures. A program of state-aided unemployment insurance has been initiated.

In addition to the items mentioned, the budget estimates of the Ministry of Social Affairs include items for departmental administration, the police system, and so forth; and this ministry's expenses, which in the year 1929—1930 amounted to 107,800,000 kr., are for 1938—1939 estimated at 317,700,000 kr. It is to be observed, however, that some of this increase is purely technical, and besides, nearly 50,000,000 kr. are taken from a growing fund constituted from pension premiums, and this amount is therefore not derived from taxation. In spite

of these facts, the increase in the ministry's budget is more than 150,000,000 kr.

The educational system and scientific researeh have required increased expenditures. A strengthening of national defenses has occasioned an increased outlay of about 50,000,000 kr. Changes in rates of pay of civil servants and the employees of government business enterprises, the military personnel, and teachers, explain the major part of the remaining increase in expenditures.

Types of Budget Expansion

The foregoing exposition has been necessary to avoid certain possible misinterpretations. The plan of using the budget as a means of reducing economic fluctuations is, to be sure, predicated upon an expansion of public expenditures during depression and their reduction in times of prosperity. The uninterrupted rise in the outlays of the Swedish budgets might well create the impression that expansion during depression could easily be carried through, but not the later contraction. Here, obviously, a sharp distinction must be observed between two different types of budget expansion. On the one hand, one has the broadening of public activities for the purpose of increasing the aggregate purchasing power of the nation through credit expansion or other measures that employ unutilized resources. This is the purpose of expansionist policies during a depression. On the other hand, there is the budget expansion that depends

upon the government's facilitation, by social legislation, of a transfer of income and purchasing power from certain social groups to others, or on its increasing the expenditures for national purposes, such as defense, whereby the increases in government expenditures correspond to a decrease in the private expenditures of the individual citizen. The former type of budget expansion in Sweden has been substantial during the depression years. The large increase in the expenditures of the state during recovery and prosperity are of the latter type.

Productive Investments

Perhaps a few words should be added regarding capital investment in state-managed activities and certain closely related fields. As was revealed by the data presented in Table 2, the total of capital investment for productive purposes rose substantially during the most recent recovery years. One can certainly deduct from the 181,000,000 kr. contained in the proposed budget for 1938—1939 the amount of 70,000,000 kr. for the building up of "reserve funds," because that amount will be made available through the Riksbank's surplus of foreign exchange funds and is to be used for imports. Despite this, the productive investments during the years 1936—1939 rose to 330,000,000 kr. In order to obtain a true picture of the situation it must be recalled, of course, that in these years there resulted also a large surplus in realized income of the government, thus producing

via taxation a reduction in the funds available for private consumers and capital investment. This surplus in the three years mentioned amounted to 210,000,000 kr., resulting in the cutting of the net amount of borrowing required to 120,000,000 kr. This development also contains evidence of the difficulties, during the rise in the cycle, of keeping the business activities of the state unaffected by the general economic expansion of the period.

It is probably too early to draw from the experiences of Sweden the general conclusion that a policy of smoothing the effects of a depression through public works must in the main confine itself to investments other than those regarded, in the business sense, as productive. A closer examination of the amounts invested reveals that the rise during recovery years practically occurs in three items. First, it has not been considered appropriate to terminate the electrification of the state railways, and furthermore, the telephone system and hydro-electric production have experienced a sharply rising trend almost wholly independent of cyclical changes. Railway electrification was initiated, for that matter, during the first years of the depression, and consequently furnished an example of how, under certain conditions, the "deflation policy" could be breached even before expansionist policies in general were accepted. If the state's business in general from the beginning of the depression had been directed—with a certain amount of risk—toward the supplying of future demand, it is possible that the course of investment would have

had a more even trend. Only continued experience can provide a more definite answer on this point.

Success of the "New Policy"

This is on the whole the conclusion that one must arrive at when faced with the question as to what lessons can be drawn from the Swedish experience from depression through recovery to prosperity or boom. In Sweden the discussion has always been lively as to the relative rôle of the different factors, especially with respect to the importance of international developments and the significance of exports compared with domestic measures in the field of monetary policy, fiscal policy, and unemployment and agricultural programs. I shall not attempt here to make an evaluation of my own or to give a description of the shadings in the conclusions of others. The only distinction of practical importance is presented when it comes to deciding how the experience of past years should influence future action. If the question is put in this way, one ventures to say that a preponderant majority of the general public and of experts in these matters consider the experience so favorable that there should be future experimentation along the lines of "the new fiscal policy."

I should like to emphasize the phrase *a preponderant majority,* inasmuch as it is not unknown that a political opposition against this financial policy continues to exist and that practical and theoretical economists are not

lacking who declare that the policy which has been followed has failed, and who warn against its application in the event of a new depression. In this connection it is not always entirely clear whether the criticism is directed against all or the essential elements in this financial policy, or only against certain, perhaps less important, of its elements.

Free Currency Necessary

In the eyes of its supporters the different aspects of the new policy, if even with different emphasis, are likely to appear as natural segments in a continuous line of fiscal policy. To the extent that this fiscal policy must be carried out by a single economy without cooperation with others, the basic requirement is a free currency not tied to gold. An expansionist credit policy during depression, of course, cannot be carried through if the condition for monetary policy is that of a fixed rate of exchange or an internal price level fixed in its relationship to that of other countries where possibly a different monetary policy prevails.

As a matter of fact, the Swedish currency for the last five years has been tied to the British pound sterling, because this arrangement coincided with and facilitated the reflation policy followed. During the period of the sharp rise in prices at about the turn of the year 1936—1937, fears of a violent inflation arose, and the government authorities declared themselves to be prepared for

such an eventuality by considering the possibility of an appreciation of the value of the krona. However, it should be stated that there has been much greater hesitancy concerning the correct policy to dampen an inflationary boom than with respect to the means of offsetting the effects of a depression. It is clearly evident that in Sweden as well as elsewhere, it is no longer considered appropriate to insist upon a certain price level as the only correct guide for monetary policy, but that this is only one of the points of departure in attempting to maintain maximum employment within the economy.

In spite of the difficulties in managing a free currency, it is assumed that this freedom must be maintained in view of present conditions, and experience tells us that cooperation between the monetary policy of the Riksbank and the fiscal policy of the government can be maintained. The dependence is mutual. A free exchange is a prerequisite for an expansionist—and eventually contractive—fiscal policy; but on the other hand, one ventures to think that a given monetary policy, e.g., reflation, cannot always be effected by banking policies alone, e.g., lowering of the rate of discount, but requires in addition the support of an expansionist fiscal policy on the part of the government.

Preparation for Depression

In order to introduce such an expansionist policy as an ordinary step in fiscal policy, a reorganization—with-

out real opposition—has been made in the government budget which assumes a deficit in the budget during an economic depression, while certain fairly definite rules have been formulated for covering the deficit by budgetary surpluses in good years. It is no longer taken for granted that declining income in a depression should be offset by increased taxation; quite the contrary, although in practice it is probably difficult to find formulas for a reduction of taxes.

If the expansionist policy in Sweden has been directed primarily to the increase of purchasing power by capital expenditures, by public works, or possibly by the granting of credit for the storage of grain, this does not depend on any theoretical misgivings concerning the possibility of increasing purchasing power through cash relief or through consumption credit, but on a distinct preference for having public expenditures take the form of concrete utilities or accrue to individuals in return for useful labor. Preparations to cope with a new depression have therefore taken the form of a survey of works projects and of planning in advance, so that delay in getting such projects under way shall be the least possible, and at all events less than when the first attempts were made in 1933. In order not to be compelled to await the reconvening of the Riksdag, the sessions of which must now take place within the first five months of each year, the government has this year proposed a special budget for preparedness against depression, in order that the necessary funds will have been voted by the Riksdag and

the government will possess the means to get works projects started when the first signs of a depression appear.

Limitation of Governmental Policies

In a country such as Sweden, with important export industries, the extent to which the economic situation is dependent upon developments in foreign countries has never been ignored. This, of course, puts an obvious limit in actual practice on governmental as well as on other business cycle policies. But this must not be allowed to hide what can be done. The decline of investment activity in one quarter—and exports can in a certain sense be considered as investment activity—directly creates unemployment and diminished purchasing power within the affected branches of the economy, but indirectly this reduces employment and demand in general, even within the industries producing consumption goods. Even if the primary decline in employment and purchasing power in the export industries can be only partly counteracted through production of stocks and increased demand for domestic production, there should be ways of substantially limiting the secondary effects upon the remainder of the economy.

To what extent this can be done through an expansion of government enterprises or activity supported by public funds alone, is for the present an open question even in a country like Sweden, where state and municipal capital investment still embraces a relatively large sector

of the economy. The question as to the participation of private enterprise in the effort to offset the effects of economic fluctuations consequently emerges as a real problem. Even in this case, the prevailing view probably is that new experience must be relied upon to give more definite answer and to furnish the basis for active business cycle policies in the future.

Economic Progress in Sweden

By Bertil Ohlin

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At the middle of last century, Sweden seems to have belonged to the poor countries in Europe. Manufacturing industries were undeveloped and wages paid to their workers were much lower than in many other countries. Towards 1860, skilled mechanics in Stockholm received an hourly pay of 10 to 15 öre, that is, 3 to 4 cents. Although it is difficult to compare costs of living under the conditions then existing with costs of living today, a rough indication can be given by the statement that costs are now about twice as high as they were then. In Great Britain the industrial wages round 1860 seem to have been three to four times as high as in Sweden. It is possible that this difference in nominal wages was offset only to a minor extent by lower costs of living in Sweden.

More important than the conditions in manufacturing industries was, however, the fact that the greater part of the agricultural population lived in extreme poverty. Hundreds of thousands of poor tenants, farm workers, and people without any regular work on the land had living conditions which were so disastrously low that they cannot be measured by present standards. Although the

available figures are most unsatisfactory, there can be no doubt that the standard of living towards the middle of last century was much higher in such countries as Great Britain, France, Belgium, and Germany than it was in Sweden.

In the course of the last seventy-five years economic progress in Sweden has probably been more rapid than in most other countries. This development has at least brought Sweden to the rank of the relatively rich countries in Europe. This does not, of course, mean that conditions can be regarded as satisfactory from any point of view. Living conditions are still deplorably poor for large groups of the Swedish people.

Comparisons of Wages

Some comparisons of conditions in different European countries may throw some light on the present situation. According to investigations made by the International Labor Office, farm workers in 1935 received wages as follows—in most cases cash wages for workers who provide their own food and lodging. In Sweden, Norway, and Denmark the daily pay was around 4 Swedish kronor,[1] or a little above 1 dollar. It has since been considerably raised. In Ireland the farm wage was around 3.35 Swedish kr. It was much lower in Finland and in

[1] The Swedish monetary unit is the krona (plural kronor), corresponding at present to nearly 25 cents. Four kronor probably buy more goods in Sweden than 1 dollar in the United States. Making an estimate on the basis of personal experience, I should say that 1 kr. corresponds to $1.25 to $1.50 in the hands of manual workers, and almost $2 in the hands of the well-to-do classes.

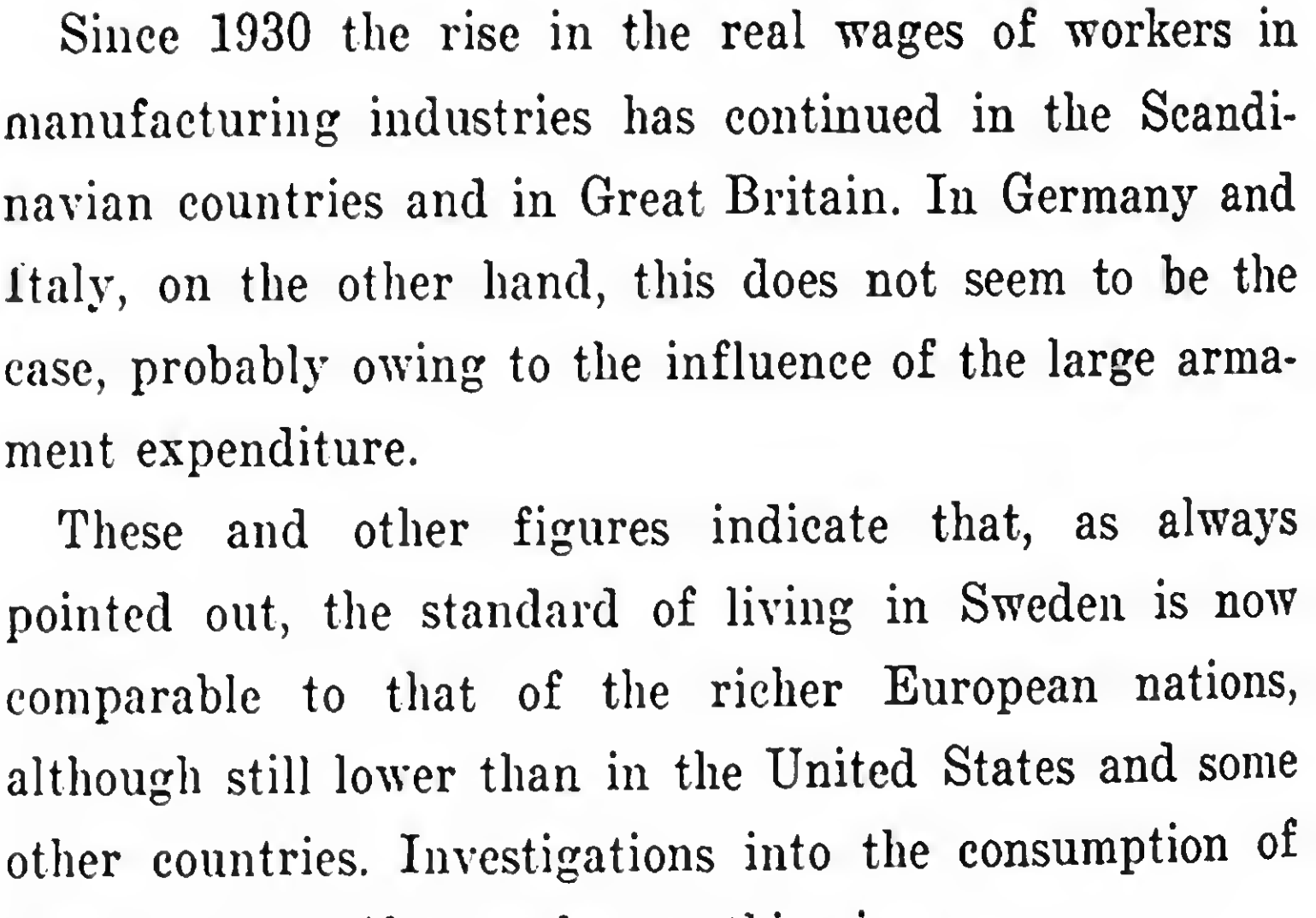
Italy, where it was around or a little above 2 kr. a day. In Hungary it was as low as 1 kr. a day, but it should be added that this was a time of extreme crisis. In 1929 the Hungarian wage was 2.50 kr. a day. In Great Britain other sources indicate a daily wage around 5 Swedish kr. No figures are available for Germany, the Netherlands, Belgium, or Switzerland, but wages there seem to be a little lower than in Scandinavia.

Although these figures naturally exaggerate the differences in real wages, as costs of living are generally lower in low-wage countries than elsewhere, there can be little doubt that the farm workers in countries where they have a high cash wage live better than the farm workers in other countries.

The International Labor Office made a similar investigation for industrial workers in 1930 in certain large cities. With the aid of costs-of-living computations, the Office reduced the nominal wage figures into real wage figures. For various reasons which I cannot enter into here, this computation is not very reliable, but it may give a rough indication concerning the living conditions of workers in different manufacturing countries. If the index number for British cities is put at 100, the corresponding figures for other countries were the following: Italy 43, Estonia 45, Austria 52, France 58, Poland 65, Czechoslovakia 74, Germany 77, the Netherlands 87, Ireland 97, Denmark 112, Sweden 113. Even the Swedish standard, however, was much below that of American, Canadian, and Australian cities.

Since 1930 the rise in the real wages of workers in manufacturing industries has continued in the Scandinavian countries and in Great Britain. In Germany and Italy, on the other hand, this does not seem to be the case, probably owing to the influence of the large armament expenditure.

These and other figures indicate that, as always pointed out, the standard of living in Sweden is now comparable to that of the richer European nations, although still lower than in the United States and some other countries. Investigations into the consumption of certain foodstuffs corroborate this view.

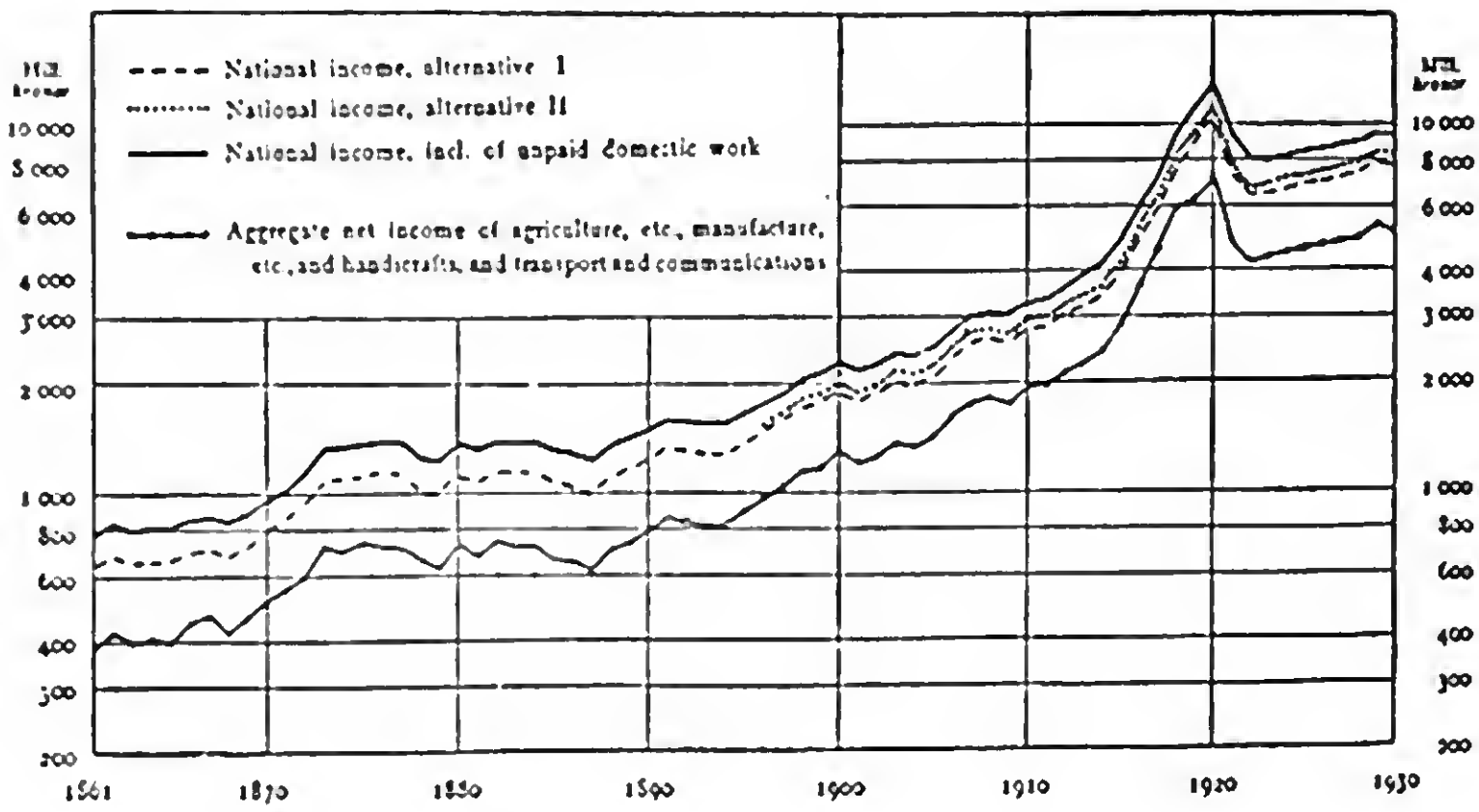


Speed of Economic Progress

From an American point of view, the fact which may be interesting is not the standard of living in Sweden as such, but rather the remarkable speed of the progress in

the last seventy-five years. Chart 1 shows the development of real wages for Swedish manufacturing workers. The only major interruption in the even rise was caused by the World War. In 1938 the real wage was probably around 10 per cent higher than it was in 1930. In judging this latter figure it should be observed that the Swedish workers still have a 48-hour week and that there has been no serious demand for a 40-hour week. The working population understands that a reduction of the working time would seriously reduce the volume of output and hence the capacity of industries to pay high wages. At present the workers prefer higher earnings rather than more leisure. It is probable, however, that when the standard of living has advanced considerably further, the time will come when more leisure will be considered more important than a further increase in earnings.

It is probable that the improvement in living conditions has been more rapid for the industrial workers than for most other population groups. Hence, it may be interesting to study the development of the Swedish national income. It is illustrated on Chart 2. When comparing the situation of 1930 with that of 1860, one should keep in mind that costs of living were perhaps about twice as high at the former date, and that the population figure was 59 per cent greater. Obviously, the real improvement, i.e., the increase in national income per head of population, was nevertheless striking. Progress has continued since 1930, in spite of the setback in 1931—1933. The



output of manufacturing industries in 1937 and 1938 was almost 50 per cent greater than in 1929.

Unfortunately it is not possible to demonstrate to what extent the national income in Sweden is more or less evenly distributed today than it was formerly. It may be safely asserted, however, that measured by English or American standards, the number of rich people for each million inhabitants is very small in Sweden. In the last decade the taxation of large incomes and fortunes has been rather heavy—a fact which has naturally tended to prevent a concentration of large fortunes in a few hands.

Causes of Economic Progress

If we inquire into the causes of the remarkably rapid economic development of Sweden, we find at once that numerous factors have contributed. The rapid industrialization gathered speed in the 1860's and the following decade, which was also the period of construction of railroads. Rail transportation opened up new possibilities

for Swedish industry. Then came the development of the electrical technique and the production of paper from wood pulp. Water power and forests then became the foundation of a rapidly growing manufacturing industry. Since the war the development of the motor car has brought a further enormous improvement in the transport conditions. It has been particularly important in a large and sparsely populated country like Sweden.

Once the industrialization had begun, it became clear that the Swedish nation has a certain talent for technical matters. A large number of inventors have laid the foundation for so-called "intelligence" industries. Matches, ball bearings, telephones, kerosene stoves, lighthouses, measuring instruments, calculating machines, refrigerators, and many other things are manufactured in Sweden on a large scale and exported all over the world, in spite of the handicap of a small "home market".

In my opinion, one of the most important factors which explain the economic progress is the Swedish educational system. As early as the 1840's, compulsory public schools were introduced. Since that time all Swedish people have received at least an elementary school training. This has certainly increased their capacity for work of all kinds. Another favorable fact is that Swedish society has for many hundreds of years—and thus long before the democratic era—been characterized by a certain spirit of democracy and local self-government. This fact has made it easier for individuals of unusual capacity, coming from the lower economic strata of the pop-

ulation, to rise rapidly to positions of influence where their gifts could be used to full advantage.

In the last decades Swedish agriculture has been caught by the spirit of rationalization. Scientific investigations have led to a remarkable improvement in the seeds and thus in the yield of farms where soil and climate have always before been considered rather poor. The farmers themselves have built up organizations which, whether they have contributed much to cheaper and more effective distribution or not, have certainly educated the farmers and made them more alive to the new tendencies and the more effective methods in agriculture.

It should not be forgotten, however, that these rapid improvements in different industries, under the leadership of men with foresight and talent for organization, have been possible only because the Swedish society as a whole has offered a milieu favorable to economic activity. An honest administration and judicial organization, as well as quiet and peaceful political conditions, are things which the Swedish people regard as self-evident. But without them, the economic machinery could not have functioned so well as it has done. Another factor worth mentioning is the relatively moderate system of protectionism in Sweden. For a small country, an attempt to foster all kinds of production by means of high tariffs would mean a serious reduction in economic effectiveness. It goes without saying that the fact that Sweden escaped participation in the World War has also been important,

although there can be no doubt that Sweden, like other European countries, suffered a setback from 1914 to 1920. (See Chart 1.)

The Swedish people is from a racial point of view more homogeneous than most other peoples of Europe. This fact has naturally made it easier to develop traditions and social habits common to the whole nation. Some social and economic problems which are important in the United States have for this reason been largely absent in Sweden.

Even before the war, the era of social reform had begun in Sweden. Hence, industry has had time to adapt itself —both psychologically and with regard to organization —to a slow process of social change. This naturally has been much easier than the necessary adaptation in countries where radical reforms have been introduced in the course of a few years. The Swedish labor movement has grown consistently since the 1890's without meeting any organized opposition from the employers, who have come to regard labor organizations as useful institutions. This has helped to breed a spirit of collaboration and confidence—particularly in the last few years. Nevertheless, Sweden has not escaped serious labor conflicts, but their influence on the economic development of industry seems to have been relatively slight.

Social Policy

Swedish social policy may be said to have passed through three stages. The first was the era of poor relief.

The solidarity of all citizens made it obvious that society should help people in distress. In the second era, which lasted to the end of the 1920's, attention was concentrated on the social insurance system, although not by any means confined to it. At present, the special emphasis rests on the organization of certain kinds of consumption on a collective basis. The hospital system and the fight against disease in general have long been organized by municipal and county institutions on practically a "no fare" or "gratis" principle, although small amounts have to be paid in some cases to cover a fraction of the cost. This is a case where "large-scale enterprise" is obviously cheap and effective, and where the advantages to society of early treatment and good care are conspicuous. Hence, the costs of the health services represent an *investment* in the most valuable productive instrument of all, the people itself.

In recent years it has become obvious that the same holds true of many other forms of "consumption"—food, clothing, housing, recreation. Hence, the emphasis is put on "productive" social policy in the form of public, semi-public, or private institutions which provide for certain minimum standards in these respects. This tendency towards a "collective" organization of consumption is growing.

It remains to be seen whether such an organization of society will succeed in retaining the advantages of the nineteenth-century economic system—its dynamic character due to the utilization of private initiative as well

as its political freedom—while providing a higher standard of health, safety, and efficiency. One thing at least is clear: The scope for further improvements in social organization is enormous. If the problems in this sphere are attacked with the aid of scientific inquiries and in a spirit of cooperation and good will, one is justified in hoping that social policy will become a potent factor in furthering continued economic progress.

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SCIENCE AND COOPERATION IN SWEDISH AGRICULTURE

by

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Science and Cooperation in Swedish Agriculture

by L. Nanneson, Hugo Osvald,
Nils Berglund and Ivar Johansson

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General Review

by L. Nanneson

As late as the end of the last century Sweden was still a pronounced agrarian state, and up to 1870, 72.4 percent of the population was engaged in farming, whereas the corresponding percentage for industry and handicraft was only 14.6, and for commerce and transportation 5.2. However, the end of the 19th century showed the beginnings of a lively industrial development in Sweden, which has continued at an ever-increasing rate since the turn of the century. In conjunction with this the agricultural population decreased both relatively and absolutely, whereas the industrial population greatly increased. According to the census of 1930 the percentage of the agricultural population to the total population of the country had declined to 39.4 percent, the industrial population had risen to 35.7 percent, and the corresponding figure for commerce and transportation to 18.2 percent.

Despite the shift in the relative extent of the different branches of industry, as indicated by the figures for the occupational distribution, agriculture still occupies an

important place in Swedish economy. More than one-third of the population obtains its direct livelihood from this branch of industry. But simultaneously with the decrease of the population engaged in farming, the volume of the agricultural production has greatly increased. Therefore, in spite of the fact that it employs fewer individuals than formerly and that Sweden's total population since 1870 has grown by about 50 percent, agriculture has been even better able to discharge its important function of supplying the country with food.

Sweden has at present about 3.7 million hectares of arable land with an additional 1.1 million hectares of natural meadow and pasture. In relation to the total land area of the country, which is about 41 million hectares, the area of the cultivated soil is but small, only about 12 percent of the total area being utilized for farming. Sweden is, above all, a forest country and timber covers the major portion of the land area, especially in the central and northern regions of the country. About one-half of the timber land is owned by farmers.

However, the relative extent of the arable land varies with the latitude and altitude in different parts of the country, and the resulting differences in the climatic conditions for production. Thus, in the southernmost county, the County of Malmöhus, the arable land comprises over 70 percent of the land area, and in large parts of this county practically all the soil is cultivated. However, in the northernmost county, the County of Norrbotten, which has an area of close to 10 million

hectares, i. e. nearly one-quarter of the entire area of the country, the cultivated land occupies only 0.6 percent of the total area.

Until 1910 a lively colonizing had been going on, and much new land was put under the plough, especially by the clearing of meadow land. From 1870 to 1910 the arable land increased by not less than 40 percent. This development has been more or less at a standstill since the World War. Efforts have instead been directed towards increasing the harvest per hectare from the already cultivated soil, and by a diversity of improvements raising the yield of pasture land and transforming primitive grazing land to improved pasturage.

Sweden is essentially a country of small farmers, the average farm acreage being only about 9 hectares of cultivated land and 3 hectares of meadow and pasture. Not less than 34.5 percent of the total area of arable land is occupied by farms with more than 10 hectares of ploughed land, 54.9 percent by farms of between 10 and 100 hectares, while farms with more than 100 hectares account for only 10.6 percent of the total acreage. However, there are only about 2,400 farms of the last-named size, i. e. they comprise merely about 0.8 percent of the country's approximately 300,000 farms having more than 2 hectares of ploughed land.

In later decades certain displacements have occured in the distribution of farming units. A great many of the large farms have been broken up into smaller ones, the so-called "*own homes*", a development promoted by the

Government through loans on favorable terms for this purpose. The idea has been to make it easier for competent agricultural laborers to become independent farmers. However, the difficulty of properly utilizing the human labor on small farms, where machines can be used to only a minor degree, has led to an increase in the acreage of the homesteads obtained by partitioning the large estates. In general, it is estimated that a family farm in Sweden, i. e. a farm giving full employment and a decent income to a farmer and his family, should have an acreage of at least 15 to 20 hectares of arable land and, if located in the central or northern parts of the country, also a rather considerable forest tract. A certain tendency to combining very small farms into larger units has evidenced itself during the past few years, experience having shown that it is very difficult for a farmer family to obtain a satisfactory wage and living standard on a farm having less than 10 hectares of arable land.

By far the greatest number of Swedish farms are managed by the owners themselves, there being relatively few tenant farmers. Of all the farms in the country having more than 2 hectares of arable land, 80.4 percent are farmed by the owners themselves and only 19.6 percent are leased.

The intense division of the land into relatively small holdings has also resulted in the major part of the farming work being done by the farmers themselves and their families. The number of wage-earners is relatively small. Of the population actively engaged in agriculture,

which according to the 1930 census amounted to about 697,000 men and 240,000 women, only 27 percent of the male and 13 percent of the female workers were actually wage-earners. Naturally, this condition can be considered a source of strength for Swedish farming, it being less exposed to labor conflicts. The wage-earners, who are mostly employed on the medium-sized and large farms, generally receive their wages in both money and in kind. The laborer on the first-mentioned farms thus usually receives cash plus board and lodging from his employer, while on larger farms, wages in kind generally include dwelling, fuel and certain quantities of grain and milk. However, compensation solely in cash in the form of a stipulated daily or hourly wage is also paid, principally in districts where industry has reached a more advanced development. The wages of agricultural laborers will be discussed below.

From the above it may be seen that Swedish agriculture is to a large extent made up of relatively small farms, in consequence of which the size of the agricultural population is rather considerable in relation to the area of cultivated land. This is shown by the following figures based on the 1930 census and giving the population per 100 hectares of arable land:

Total agricultural population	50	persons
Actively engaged in agriculture		
Men	18	»
Women	6	»

These figures indicate that Swedish agriculture employs a large number of people per unit area and that a still greater number obtain their chief support therefrom. It should be noted, however, that the farming population also earns a considerable part of its income by combining farming with forestry, and the small farmers frequently have other kinds of work as well.

Progress in Plant Production

by Hugo Osvald

One of the most outstanding features in the development of Swedish agriculture during the last decades has been the large increase in the yield of plant products. In order to obtain suitable figures for comparison, it is customary in Sweden to express the entire crop in so-called feed units. By such a unit is meant 1 kilo of wheat, 1 kilo of rye, etc, and the equivalent quantity of other products possessing the same calory value, say, 4 kilos of potatoes. In order to illustrate the changes, the number of feed units for some representative 5 year periods will be given. Thus, the average harvest per year was as follows:

	million feed units
1871—1875	4,950
1911—1915	7,740
1921—1925	7,780
1931—1935	8,860

During the past three years the total yield has increased even further. In 1936 it was 8,800, in 1937, 9,600, and in 1938 about 10,000 million feed units.

If we consider the composition of the total yield we shall find that the relative proportions of, say, grain and potatoes have not undergone any substantial changes. During the entire period from 1870 to the present the yield of bread cereals has averaged 11 to 12 percent and the potato yield between 5 and 6 percent of the total crop for 5 year periods. The greatest changes have taken place in the growing of root crops, fodder roots as well as sugar beets. These have increased from about 1 percent in 1870 to approximately 10 percent of the total crop.

Although no great changes are to be noted when dividing the crop production into a few major groups, we can, however, find considerable differences if we examine the individual plant species. Particularly outstanding is the change-over from rye to wheat. In the 5-year period 1871—1875 the total wheat acreage was 62,500 hectares, in 1911—1915 it was 116,000 hectares, 1921—1925, 142,500 hectares and 1931—1935, 284,000 hectares. During the last three years the wheat acreage has continued to increase, and in 1938 it was 307,000 hectares. This expansion refers to winter wheat and spring wheat; in respect to the total acreage the greatest increase may be noted for the former, the relative increase, however, being considerably larger for spring wheat. During the years 1871—1875 spring wheat was grown on only 3,600 hectares. Thereafter its area increased at about the same rate as the total wheat acreage, and as late as 1911—1915 it averaged only 7,100 hectares.

However, in the period 1931—1936 it had risen to 66,300 hectares. The expansion of winter wheat has taken place largely at the expense of winter rye. True, this rose from 350,000 hectares at the beginning of 1870 to about 400,000 hectares at the beginning of 1900, but then it dropped, so that in 1911—1915 it was 378,000, and in 1938, 192,000 hectares. The spring wheat, on the other hand, has quite naturally gained ground at the expense of other spring cereals, oats and barley. The total yield of bread cereals was in the years 1871—1875, 570,000 tons; in 1931—1935 it was 89 percent greater, or 1,078,000 tons, and in 1938, 1,226,000 tons — the greatest crop ever harvested in this country and considerably larger than the requirements.

From about 1870 to 1930 the Swedish plant production increased about 80 percent, and in 1938 the increase was 101 percent, i. e. more than twice. About half of this increase of the yield took place before the war, accompanied, as indicated by the figures given in the previous chapter, by an increase of the area of high-yielding cultivated land and a reduction of the area of the low-yielding meadow land. However, since the war, the country's total area of arable land has remained about constant, although the yield has continued to rise at a steadily increasing rate. This is due to the fact that the production per unit area of arable land has increased considerably. During the years 1871—1875 the average harvest was only 1,480 feed units per hectare of cultivated land, and until the beginning of 1900 there was

but a slight increase. After this, however, a sharp rise set in, and the harvest per hectare of arable land rose during the years 1911—1915 to 1,870, in 1921—1925 to 1,880, and in 1931—1935 to 2,150 feed units. The last figure in comparison with that of 1870 shows an increase of about 45 percent.

There are many reasons for this marked increase in the yield per unit area. The progress made in tillage, in fertilizing, and in plant breeding has been rapidly adopted and widely applied in Swedish agriculture and has benefited farming and the national economy in general. We shall now examine some of the factors which have contributed to this extremely favourable result.

Soil drainage is, as we know, very important for obtaining an increased yield from the soil. Whereas in the early 'seventies cultivated land in Sweden was still drained largely by means of open ditches, thereafter subsoil drainage began to be more common. This involved a better drainage of the arable soil, which in turn made possible more intense farming. It is estimated that already at the time of the war about one-quarter of Sweden's arable land, or 933,000 hectares, was drained by means of subsoil drains. The materials used for these were in part tile pipes, and partly other materials such as stone, wood, etc. Since then there has been no appreciable increase in the sub-drained acreage, but the inferior drain material has been to a large extent replaced by tile pipes. The sub-drained area is relatively greatest in the more important farming districts — those contrib-

uting the most to the total yield. Here, the cultivated land consists mainly of clay which requires considerable draining. The comparatively largest sub-drained area is found in the plains of Östergötland, where 70 percent of the total arable land is drained in this manner. Thereafter follow the plains of Skåne and Halland with about 50 percent. The progress made in soil drainage has among other things led to a better tillage and an earlier sowing, which undoubtedly has had a significant influence on the increase of the total yield.

Improvements have also been made with regard to farming implements, ploughs, harrows, etc., which have resulted in a more efficient tillage, making it possible to work the soil to a greater depth than formerly. Skim ploughing or other methods of tilling early in the fall — immediately after the grain harvest — have become more common in recent years, and have without a doubt been of great importance. In regard to the progress made in the agricultural technique, we refer to the chapter on machine technique.

A very important factor in raising the yield is the use of fertilizer. In the beginning of the 'seventies practically no fertilizers were used in Sweden. During the next decades their consumption rose very slowly, especially in respect to nitrogen, but later on it increased more rapidly, though with definitive interruptions in times of depressions. The figures below show the increased consumption from 1913 to 1936 of the nutrients nitrogen, phosphates and potash, in kilos per hectare.

	1913	1925	1931	1936
Nitrogen	1.5	2.6	4.0	6.5
Phosphates	9.6	9.9	11.0	14.9
Potash	5.0	9.2	6.1	10.2

Even before the war the use of phosphates was relatively common, whereas nitrogen was little used. However, from 1913 to the present time the latter has increased more than fourfold. In attempting to estimate the importance of fertilizers for increasing the yield, we may consider that 1 kilo of nitrogen gives on the average 17.5 feed units, 1 kilo of phosphates 5, and 1 kilo of potash 3,5 feed units. These figures are derived from numerous experiments combined with a knowledge of the manner in which fertilizers are used on the farms. Employing these figures and the consumption per hectare in 1936 for an estimate of the importance of fertilizers, we find that nitrogen contributes about 425 million feed units, phosphates 285 million, and potash about 130 million, or altogether 840 million feed units, i. e. approximately 9 percent of the total crop for the period 1931—1935. However, the use of fertilizers is very unevenly distributed in Sweden, the large plains with their root crops consuming most of the nutrients, especially nitrogen.

Another factor of great importance is the improvement in the care of the manure effected in the last decades. Taken absolutely, manure supplies the cultivated plants with their greatest amount of nutrients, and its condition

is therefore very important. In the past the care of the manure was very inefficient, and in consequence great quantities of nutrients were lost, due to leaching by rain or to the escape of gaseous nitrogen. During the last decades of the 19th century the situation became considerably improved when peat moss litter came to be used in increasing quantities. More recently, measures have been taken on the larger farms to preserve the manure in a more efficient manner by constructing manure storage places of cement or other material, and also often cemented urine tanks. As yet, however, only about 20 percent of the farms in the country are equipped with manure storage places with impenetrable bottoms.

An additional factor of very great importance for the increase of the total production is the change which has taken place in regard to crop rotation and the utilization of the cultivated land. At the beginning of the 'seventies the most common crop rotation in large parts of the country was still fallow, winter cereals, 2 or 3 years of ley and 2 or 3 years of spring cereals. During the years 1871—1875 the fallow land, i. e. the unused part of the arable land, amounted on the average to 398,000 hectares per year, or about 15 percent of the area of cultivated land at that time, that is, the fallow acreage was equivalent to about one course in the 7 year crop rotation and was very nearly as large as the acreage of winter cereals. Since then the fallow acreage has gradually diminished, coincident with the increase of the total area of cultivated land, so that in 1911—1915 it comprised

346,000 hectares, 1921—1925, 319,000 hectares, and in 1938, 220,000 hectares, or not quite 6 percent of the entire area. However, this reduction in fallow land acreage has not been uniform throughout the country. It has been the greatest on the plains of the County of Malmöhus with its intensive farming, where it comprised about 1.7 percent in 1932. In other parts of southern Sweden, too, fallow land is now used to only a minor extent. But in the central Swedish plains, fallow occupies in many places one course of the rotation and amounts to from 10 to 12 percent of the arable land.

The declining use of fallow and, consequently, the more intensive utilization of the arable land is associated with changes in the crop rotation which, among other things, have made possible more intensive farming and new methods of controlling weeds. One such change is the increasing cultiyation of root crops and potatoes. During the years 1871—1875 the entire acreage of root crops and potatoes comprised 159,000 hectares, of which a major part was potatoes. In 1931—1935 the potato area comprised 133,000 hectares, and the acreage of fodder roots and sugar beets had grown to 126,000 hectares. This sizable extension of the root crop acreage proper has to a great measure contributed to the increase of the total yield. This is due in part to the fact that both sugar beets and fodder roots give a greater number of feed units per unit area than other cultivated plants, and in part to the cultivation of roots, especially in the southern agricultural districts, having made possible the intro-

duction of a more suitable rotation, chiefly more or less modified forms of the so-called Norfolk rotation.

A very important change is also the transfer of a considerable part of the forage production from meadow to arable land, which has occurred at about the same rate as the increase of the total arable land. During the years 1871—1875 grain occupied more than 50 percent of the area, and clover and grass approximately 28 percent; at present the figures are about 42 percent and 43 percent respectively. Along with the extension of the grass land (leys) from 732,000 hectares in 1871—1875 to 1,593,000 hectares in 1938, an increase of the yield per unit area can be noted from the beginning of the 20th century. This increase is related partly to the factors mentioned above, but no doubt it should also be associated with the fact that the leys are now largely sown with spring grain instead of winter grain as formerly. Since the leys give a considerable higher and more dependable yield than the meadows previously used, this change means a great increase in the production of fodder. The increased cultivation of clover has also exercised a beneficial influence on the other crops in the rotation.

In this connection a few words should be said about the increased yield obtained from the reclaimed peat lands. This kind of soil now probably occupies about 15 percent of the arable land. Formerly, it was used chiefly for the cultivation of oats. As a consequence of deficient drainage, inferior content of nutrients, and the uninterrupted growing of oats, which was conducive to the

growth of weeds, these areas gave too low a yield. Through experiments begun around 1890, by the Swedish Peat-Land Cultivation Society, it was demonstrated that several other varieties of plants could be successfully grown on peat soil, and gradually a more successful crop rotation — in which ley was prominent — was introduced on this land. As a result of these changes — together with other improvements in farming technique — the yield per unit area of the peat land has substantially increased.

Plant breeding has been greatly instrumental in raising the yield of Swedish agriculture. At the end of the last century old native varieties were grown which, although quite suitable to the climatic conditions in Sweden, had nevertheless many undesirable properties. The cereals for example, were mostly weak-strawed, and were susceptible to various kinds of diseases. Towards the end of the 19th century the relatively low-yielding native strains of cereals began to be displaced by foreign varieties, especially in the southern sections of the country. This was particularly the case with winter wheat. However, the West European varieties of winter wheat chiefly brought in at that time were not sufficiently hardy to be successfully grown in this country. Through the efforts of the *Swedish Seed Association* (Svalöv), founded in 1886, work on the improvement of winter wheat was begun. Subsequently, plant breeding was started at *Weibullsholm's Plant Breeding Station*, and since then some additional minor stations have been established. At first the breeding work consisted of select-

ing the hardiest and best strains of foreign varieties but later crossings were made of these and the native varieties, by means of which a number of high yielding and reliable varieties suitable for the different parts of the country were produced. These new varieties combine the hardiness and high quality of the native wheat with the strong straw and high yield of the West European wheats. The most outstanding improvements up to now have been in the field of winter wheat. Through comparative trials made at *The Plant Breeding Station* at Svalöv and its various branches throughout the country, it has been found that in the wheat districts of Skåne and Östergötland the newest varieties give an increased yield of 40 to 50 percent over the native varieties, whereas in the central Swedish wheat district the increase is 10 to 20 percent. At the same time this breeding has enabled an extension of wheat growing towards the north. Along with these considerable improvements in yield, substantial progress has also been made in respect to increasing the strength of straw in the different varieties, permitting the use of comparatively heavy dressings with nitrogen fertilizers. The ability of the plants to resist diseases has also been greatly improved, and as far as wheat is concerned a greater resistance has been developed, particularly against yellow and black rust. The latter is no longer of the same importance as previously, since the risk of the spreading of this disease has been considerably reduced through the intensive campaign to eradicate the barberry bush *(Berberis vulgaris)*. The development of the high-

yielding reliable wheat varieties has been the most important prerequisite for the increase of the wheat area. Particularly outstanding is the relation between the improvements in spring wheat and its increased area of cultivation.

However, the very great increases of the wheat crop in the last decades would not have been possible had it not been for another aim of the plant breeders, viz. the improvement in quality of the Swedish wheat. The first bred varieties were far inferior in quality to the native varieties, but this was of no significance at the beginning of the 20th century, for then hard foreign wheat was always mixed with the Swedish. However, the attempts at producing a high yielding wheat of a quality approaching that of the old native wheat have since then been successful, and Swedish wheat can now be used for the baking of a fairly high grade bread without the admixture of hard foreign wheat.

In respect to rye, the progress has not been as great, due chiefly to the fact that the improvement of rye is far more difficult than that of wheat. However, a degree of success has been attained in combining the high yield of some foreign varieties of rye with the hardiness of old Swedish native varieties.

Oats still occupy a larger area in Sweden than other grains. The development of varieties for the southern and central parts of the country has been based chiefly on certain foreign strains, but the new early varieties for northern Sweden have been obtained by crossing foreign

with native material. The improvement thus effected in relation to the old 'native varieties amounts to from 10 to 15 percent for the southern and central Swedish oats, and from 15 to 20 percent for the northern varieties.

Progress has also been made in the breeding of barley, not only as far as the size of the crop is concerned, but also as regards its earliness, strength of straw, and quality.

Most of the other agricultural plants of Sweden have also been subjected to breeding, with lesser or greater degrees of success. As far as certain cultivated plants are concerned, however, the improvement of the breeding material has been essentially due to the use of new foreign varieties. This, for example, is the case with potatoes.

We have already mentioned a number of the factors which have been instrumental in increasing the yield of the leys. Two additional ones will now be given. The seed used in sowing was still at the beginning of the 19th century mainly foreign and as such not suited to Swedish conditions. The distinct improvements in this respect are due both to plant improvements and the increased seed production in the country. Indigenous seed for clover and the most important grasses is now available for most of the acreage which annually is to be sown with plants.

Among the changes which have taken place in recent years in regard to the care of the leys may be mentioned the earlier hay harvest. The total yield has not been raised by this, but the quality of the forage

crop is now considerably better than formerly. Simultaneously, a radical change has occurred in respect to pasture lands and their yield. During the years just before the World War most of the grazing lands were still forest and uncultivated pasture, but in the last decades the area of cultivated pasturages has sizably increased. Most of the credit for this must be given to the *Swedish Grassland Society*,[1] founded in 1916. In the beginning the cultivated pastures were chiefly improved forest land, but now cultivated soil is largely used for permanent pasture. The change in pasturage does not evidence itself in the increase of the vegetable production, but appears first in the animal production.

Finally, it might be of interest to give a brief review of the increase in the yield per hectare of some of the more important cultivated plants from 1870 to 1930 and 1938, resulting from the factors discussed above.

	Yield tons per hectare		*Relative increase* %	Yield tons per hectare 1938
	1871—1875	1931—1935		
Winter wheat	14.6	24.2	66	28.6
Spring wheat	13.7	18.4	34	20.3
Winter rye ..	13.8	19.4	41	20.3
Barley	14.8	19.8	34	24.2
Oats	13.0	17.7	36	20.7
Potatoes	79	139	76	137
Hay	30	35	17	39

[1] From the beginning of 1939 this association has been amalgamated with the above mentioned Swedish Peat Land Cultivation Society under the name of the Swedish Grassland and Peat Cultivation Society.

According to the yields per hectare given for the years 1931—1935 Sweden stands foremost among the agricultural countries of the world, surpassed only by Belgium, Holland, and Denmark.

A very substantial part of the increases reported here have occurred during the past 10 to 20 years. There was, for example, no marked increase of the spring wheat crop per hectare before the period 1926—1930; for winter wheat the relative increase for this period was 51 percent; for winter rye it was 19 percent, for potatoes 45 percent, etc.

The considerable increase of the yields per hectare which thus took place during the most recent years seems rather difficult to explain, even if all the factors mentioned above are taken into account. Many of the changes in connection with agricultural technique, plant breeding, fertilization, etc. which were mentioned, were by no means of such magnitude that they can explain the exceptionally strong increase of the harvest from the period 1926—1930 to 1931—1935 and from this to 1938. For the explanation of the increase in the last decade we must look for other factors. These are perhaps to be found largely in the fact that Sweden during this time has been favored by particularly good weather for farming. The winter wheat in particular has benefited by the weather in these years, and since at the same time the wheat area has expanded due to other conditions, we have witnessed such a remarkably rapid increase of the

wheat crop that the total yield figures have been doubled during the last 10 years.

In spite of this great increase in the yield, possibilites still exist for a futher increase, and, consequently, a better income for the Swedish farmers. There still remain in Sweden large areas of poorly drained soil which could be brought to a better state of cultivation by efficient drainage. Although the fact must be taken into account that the conditions of large parts of the arable land are such that sub-drainage is unnecessary, it must be admitted that there is still much to be done as long as three-quarters of the Swedish cultivated land is poorly drained.

It has already been mentioned that the use of fertilizers is quite unevenly distributed in Sweden. This is especially true of nitrogen. While on the plains of Skåne an average of 26.4 kilos of nitrogen per hectare were used in 1936, the consumption, for example, on the plains of Västergötland was only 3.8 kilo per hectare, and there are also other important agricultural regions in Sweden where the nitrogen consumption stays between 2 and 3 kilos per hectare. Even if it must be admitted that the nitrogen consumption in the parts of the country where sugar beets are not raised must be considerably lower than in the intensively cultivated plains of Skåne, there still exists, however, great possibilities for a further increase of the Swedish yield. In many areas a three or fourfold increase in nitrogen consumption would undoubtedly prove profitable.

It goes without saying that continued improvement of the breeding material of all the cultivated plants is extremely desirable. As far as winter grain is concerned, the work is now directed primarily towards obtaining varieties more suitable for baking. This plant breeding is progressing along two lines, viz. by crossing Swedish varieties of winter wheat with foreign winter wheat from countries with a continental climate, and by crossing winter wheat with spring wheat. The latter method is being used both in an attempt to raise the quality of the winter wheat and to increase the yield of the spring wheat. The progress which has already been made seems to auger well for the future. Another field in Swedish plant breeding is the improvement of potatoes. The most destructive potato disease is still potato blight, and in this as well as in other countries work is being done to develop varieties which are not susceptible to this disease. True, no practical results have as yet been reached in this direction, but it does not appear at all impossible that even this problem will some day be solved.

Another field in which great hopes are placed on plant breeding is the control of the parasites which attack red clover, the most important of all Swedish forage plants. Red clover plays a decisive role in the yield of the hay crop, but this clover has two deadly enemies, viz. clover stem rot and clover eelworm. It has not been until lately that success has been achieved in producing a variety of clover with a comparatively high resistance to these diseases. This variety cannot be used throughout

the country, but the results obtained raise hopes for the development of types from the clover strains used in central and northern Sweden which will not fall a prey to these diseases.

In regard to the breeding of forage plants a few words may also be said about the Swedish attempts to introduce the soybean. The feed which must be imported to Sweden is comprised largely of seeds rich in protein, e. g., peanuts, soybeans, etc. and for this reason attempts have been made to develop a type of soybean that can be grown here.

From the above it is evident that Swedish agriculture during the last half century, and especially in the post-war period, has undergone an almost revolutionary development. Nevertheless, great possibilities still exist for further progress and, consequently, for a better livelihood for the Swedish farming population.

Technical Improvements and Electrification

by Nils Berglund

Simultaneously with the remarkable increase in production which Swedish agriculture has exhibited during the last half century, there has been a decrease in the agricultural population. From this it may be deduced that agriculture in Sweden has become highly mechanized — which is actually the case.

Sweden is richly endowed with waterfalls suitable for conversion into electric energy, and the country as a whole is now electrified to 78 percent, which means that electric energy is available to about 3 inhabitants out of 4. However, in more densely settled communities the degree of electrification is higher than in rural districts. The towns and villages are almost 100 percent electrified, while the rural districts with five-eighths of the population are only 65 percent electrified.

The electrical distribution net was extended to its present scope several years ago. Since then the characteristic feature of the development has been the increased energy consumption of the farms already electrified. A con-

tributing factor to this has been the progressive reduction of the electric rates, which have now become quite low — about 4 to 8[1] öre per kilowatt hour — to which is added a certain fixed amount for plant amortization and interest charges.

On the farms electricity is used principally for lighting. But it is also used for small motors which work milking machines, water pumps, seed cleaning machines, hay and grain hoists and other transport appliances, wood saws, etc. In addition, it is rather usual to find on the farms a somewhat larger, movable electric motor employed for threshing, for grinding feed grain, and for sawing timber for farm buildings. Sometimes there is also a hot water heater, but it is more common to find small electrical household appliances, viz. electric irons, vacuum cleaners, and radios. Electric stoves are not very often used in rural districts, the country being wooded and thus well supplied with fire-wood. However, an electric stove is regarded as an excellent complement to a wood stove, especially in the summertime.

Before electric motors came into general use for threshing and other heavy stationary work, internal combustion motors driven by crude oil or kerosene were used to some extent. But now the tractor predominates, and in 1930 there were about 7,000 tractors on Swedish farms; in 1937 the number had risen to 10,000 and by the end of 1938 to 15,000. True, the number of tractors

[1] 4 öre = about 1 cent.

per 100 hectares of arable land is not very great in comparison with the number used in American farming, but the present tendency is towards a sharp increase, and the sale of tractors now amounts to about 4,000 per year. Many tractors are imported from the U. S. A. and from England. Up to now kerosene tractors of from 22 to 35 H. P. have been common. The present development seems to be in the direction of an increase in the number of small tractors, because in the future it will be mainly a question of motorising small farms, and equipping large ones, which already possess a heavy tractor, with small units for light work. The tractors manufactured in Sweden are semidiesels, noted for their low fuel consumption and the use of a cheaper fuel than kerosene. Swedish industry is also working on gas generators, and there exist at the present two makes of charcoal generators which are mounted on kerosene tractors of the usual type.

In its mechanized farming Sweden, more than any other European country, resembles the United States, particularly the northern and eastern states. Practically speaking, every farm uses drill machines, mowing machines, and many also have grain binders. The threshing is generally done by modern threshing machines. Potato planting is usually done by hand, but the harvesting most often by machine. Horse drawn implements are used for the root crops. On small areas artificial fertilizer is spread by hand, and on larger areas by spreaders.

Hoists with carriers are generally installed in the barns for the unloading of hay and grain. Other stationary transport appliances which may be mentioned are blowers, which blow the straw and chaff from the threshing place to the storage room over the stables. In new buildings small grain blowers are sometimes installed for blowing the threshed grain to the store house. The threshing work is thus greatly mechanized, and a part of it is done in connection with the harvesting, while the remainder is carried on later in the fall. When all the grain is to be threshed simultaneously the barns are often equipped with dryers for the threshed grain.

A characteristic feature of the technical development in recent years is the increased use of pneumatic tires on farm wagons. So far the wheels generally have been taken from scrapped automobiles. But now the development has reached the point where new, specially manufactured tires are coming into use. Rubber wheels are also used on wheelbarrows and to some extent on grainbinders. Tractors, however, were not equipped with rubber tires until 1937. It might seem strange that this did not take place until several years after rubber-wheeled tractors had taken hold in the United States. This is due to the fact that the arable land in Sweden consists chiefly of a stiff clay soil which becomes slippery on the surface when the fall rains begin, and ploughing under such circumstances therefore requires a change-over to steel wheels. It is the increased use of the small

tractor for more all-round work and transport which has suddenly brought on the rubber tires.

Legislation recently passed regulating the working hours of rural laborers will undoubtedly speed up the mechanization. Characteristic of the present situation are the efforts to mechanize the small farms by introducing the joint use of expensive machinery and implements.

Stock Breeding and Animal Production

by Ivar Johansson

Swedish agriculture is largely centered on the production of forage crops which domestic animals then convert into animal products. The total annual harvest can be estimated at 9,500 million Scandinavian feed units, and about 80 percent of this is consumed as forage. During 1937, 550,000 tons of feed concentrates or the raw material for such was imported, which may be considered as the equivalent of about 600 million feed units. From these figures it can be estimated that 8 percent of the cattle feed consumed that year was of foreign origin, while 92 percent was produced within the country.

The milk production in recent years has been continually increasing, and now amounts to about 4.8 million tons per year. This growth in volume is not the result of an increase in the number of cows, but of the fact that the average yield per cow has risen. In 1938 Swedish creameries weighed in about 3 million tons of milk, and of this 2.4 million tons, or 50 percent of the total production, were converted into butter and cheese. The same year 29,000 tons of butter were exported, and

if it is estimated that every kilo of butter produced requires 25 kilos of milk, it may be said that the amount of butter exported is equivalent to 15 percent of the total milk production of the country. There are at present about 2 million milk cows in Sweden, and from the total milk production the yield can be set at 2,400 kilos of milk per cow and year. The output of beef covers the domestic need and sometimes leaves a surplus for export.

The hog stock was about 1.4 million animals in 1938. The total production of pork can be estimated at 145 million kilos of which approximately 14 million kilos, or 10 percent, were exported. Sheep raising is carried out only on a small scale; merely 6 to 7 percent of the total consumption of wool is filled by domestic production, and a certain amount of mutton is imported. In poultry breeding, hens are the most important. In the past few years Sweden has had an export surplus of 2 to 3 million kilos of egg. The import of poultry has been somewhat larger than the export. The breeding of furred animals has grown in importance during the last decade. It has been estimated that the following number of pelts were produced in 1938: 108,000 silver foxes, 28,000 blue foxes, and 56,000 minks. The value of the entire fur production approaches at least 10 million kronor.

After this general review of the animal production, a brief account of the most important domestic animals will be given.

Horses

The number of horses has kept practically constant during the last 30 years and amounts to about 615,000 animals. The most important breed is the Belgians, which was first introduced into Sweden in the last decades of the 19th century. This breed comprises two-thirds of the entire number of pedigreed horses. There is still some import of breeders but the domestic breeding material is of a very good quality, and some export of animals also goes on. The Belgian horse has shown itself to be an excellent farm horse for the plains of southern and central Sweden. Next in importance is the North Swedish horse which is used in Norrland and the forest regions of central Sweden. This is a Scandinavian race bred from the native types, and similar horses imported from Norway. The North Swedish horse is considerably smaller than the Belgians and has a livelier temperament. It is a good farm horse on easily worked soil and, in addition, very suitable for forest hauling. About 10 percent of the registered horses are warm-blooded and are kept chiefly in southern Sweden. The breeding of warm-blooded horses is based largely on half-breds imported from Germany, especially East Prussian and Hanoverian, but English thoroughbreds are also used to a certain extent as breeding material. Warm-blooded horses are mostly bred to supply the army with cavalry horses. The state supports the breeding of both warm-blooded and cold-blooded horses in several different ways—one being by

horse shows where prizes are awarded to deserving animals. There also exist associations for the different breeds, which take care of the studbooks. For the breeding of warm-bloods the state maintains a breeding station and two stallion depots.

Cattle

The Swedish cattle stock is comprised of 3 million animals, of which two-thirds are milk cows. No beef breeds exist, and raising stock directly for slaughter is uncommon. The beef sold on the Swedish market comes from milk cows that have been weeded out, bulls and heifers which for some reason or other cannot be used for breeding. Due to the fact that meat prices have been comparatively low, the breeding of slaughter animals has not proved to be profitable. Three different dairy breeds are used, viz. Swedish Friesian, Swedish Red and White cattle, and Red-Polled Swedish cattle.

Swedish Friesians comprise 25 percent of the entire number of registered cattle, the breed being kept chiefly in the best agricultural districts of southern and central Sweden. In the 18th century and the beginning of the 19th, Friesians were imported from Holland and North-western Germany, but it was not until the last decades of the 19th century that they attained any great extent in Sweden. During the last 30 years only some occasional animals have been imported. In size and type the Swedish Friesians resemble closely the corresponding cattle in Holland and Germany. The average weight of

a full grown cow is 600 kilos and the average annual yield of a registered cow amounts to 5,000 kilos of milk, containing 3.5 percent butter fat.

Swedish Red and White cattle are found over the entire country, with the exception of the north, and in central Sweden this breed is, practically speaking, the only one. It has been developed by crossing the native types with Short-horns and Ayrshires imported from England and Scotland. Ayrshire cattle were registered in Sweden until 1928, when this breed became merged with Swedish Red and Whites, to which at present 65 percent of all the recorded cattle belong. The average weight for full grown cows is about 525 kilos and the average yield per cow and year amounts to 4,000 kilos of milk with 4 percent butter fat. In type this breed resembles the lighter Dairy Shorthorn, being red in color with small white markings.

Red-Polled Swedish cattle are found almost exclusively in northern Sweden (Norrland and Dalarna). The animals are small in size: the mean weight of registered cows is about 400 kilos. This breed has two different color variations, an all red and one mostly white with black or red markings. The registered cows give an average yield of 3,000 kilos of milk with 4 percent butter fat. The breed is noted for its hardiness and contentment and is therefore very suitable for the often rather primitive farming conditions in northern Sweden.

The Cow Testing Associations have been of inestimable value in the breeding of dairy cattle. The first cow test-

ing association was established in 1898 and at present there are over 1,000 such associations in the country, which control 18 percent of the total cattle stock. During the period 1910—1914 the average yield of the tested cows was 2,900 kilos of milk with 3.4 percent butter fat; in 1936 the corresponding average was 3,590 kilos of milk with 3.65 percent butter fat. However, it is not only the yield of the tested cows that has increased during the last decades — the yield of the non-tested has also risen to an almost equal degree. For the years 1924—1928 the average yield of all the cows in Sweden was estimated at 2,175 kilos of milk, but at present the corresponding figure reaches at least 2,400 kilos. This increase of the average yield is the result not only of successful selection, but probably just as much of improved feeding. During the 40 years in which this control has been in force it has been possible to base the selection of breeding animals on the result of the yield of the cows, and in the past 15 years the selection has been further narrowed down by the introduction of progeny tests for bulls. This yield test has become an absolute prerequisite for herd book registration: all bulls must have yield-tested maternal ancestors for at least 2 generations and the females are registered on the basis of their own yield or, in certain cases, that of their dams. The cow testing associations receive economic support from the state.

Bull Societies have also played an important part in cattle breeding. At present there are in Sweden over

2,300 such societies, and the number of females covered by their bulls amounts to 213,000. The State gives considerable grants to the societies which about cover the cost of purchasing new bulls. Country fairs are, on the other hand, of minor importance for animal breeding in Sweden.

For every breed of cattle there is a breeders' association which supervises the recording, arranges auctions of breeding animals, and in other ways works towards promoting the breed.

Sheep and Goats

The breeding of sheep and goats plays a secondary role in Swedish animal husbandry. The number of sheep has greatly diminished during the last 20 years—in 1919 it comprised 1,500,000 animals, but at the present only 425,000. Wool represents only about 20 percent of the income from sheep breeding, and the production of meat is therefore the major object. Three imported breeds of sheep are kept, viz. the English Cheviot, Shropshire, and Oxford-downs, as well as the Swedish native sheep. The Cheviot breed is the most common, the next in importance being the Swedish native sheep, which during the past decade has increased considerably in number. A yield control has been enforced for registered livestock according to which a lamb is weighed at birth and at two months of age in order to obtain an idea of the ewe's lamb yield. The wool return is also controlled. The State

furthers sheep breeding by giving grants to ram associations and breeding centers.

The number of goats amounts to only 50,000. Two breeds are maintained, viz. the Saanen goat imported from Switzerland and the Swedish native goat. Goat breeding occurs almost exclusively in northern Sweden, chiefly in Jämtland.

Pigs

Swedish pig breeding was relatively insignificant up to the end of the 19th century, but then it began to advance. Sweden imported pork until as late as 1910, but during the five year period 1911—1915 the import surplus was converted into an export surplus of about 10 million kilos of pork per year. During the war pig breeding dropped due to a lack of feed, but since 1920 rather large quantities of pork have been exported annually, chiefly to England. The output of pork is greatest in the most southerly province, Skåne, where pig breeding is an important complement to the production of milk.

Only two different races of pigs are maintained in Sweden, viz. the Large White, originating in England, and the improved native breed. Both breeds are of marked bacon type and all white in color. No mentionable difference exists between the breeds in respect to their economically important characteristics.

In Swedish pig breeding, efforts have been directed towards developing animals with good fecundity, rapid

growth, and high quality pork. In 1928 a control began of the pig yield of the sows, and this is now enforced for all registered animals. The number of pigs in every litter is recorded and at 3 weeks of age each pig in the litter is weighed, the total weight of the litter being taken as an expression of the mother's fecundity and ability to feed her young. A sow's production ability is judged on the basis of several successive litters. In 1923 the first Government station for so-called herd control, or pig testing, began its activity. This control proceeds as follows: a random sample of 4 pigs about 8 weeks old, two of each sex, are taken from the breeding stock and sent to the testing station. Here they are brought up under the same feeding conditions as all the test groups, with their food consumption and growth carefully controlled until they have reached a live weight of 90 kilos, when they are slaughtered, the carcass weighed, and the quality of pork determined. By this testing of a number of groups from each boar from commercial breeding stocks, it is possible to obtain a good idea of the hereditary influence of the boars on their progeny. At present this pig testing is being carried out at 4 different testing stations, two of which are run by the State.

In the County of Malmöhus, where the yield test of sows has reached its greatest extent, the results in 1935—1936 were as follows: the average yield per dam was 1.7 litters a year, the number of piglets per litter were 10.3 at birth and 8.5 after 3 weeks, when the average weight of the pigs was 5.3 kilos. A daily growth

of 0.67 kilos has been obtained for animals of between 20 and 90 kilos live weight, the feed consumption being 3.4 feed units per 1 kilo increase. Thanks to pig testing and litter recording a much better guide to the selection of breeding animals is now possible than was the case formerly, and considerable progress has been made in the past 15 years in respect to the rapid growth of the pigs and the quality of the pork.

The State gives grants to boar associations for the purchase of breeding boars. In many counties compulsory inspection of these animals is enforced, and only a registered boar may be used to cover sows belonging to a person other than the owner of the sire.

Poultry, Furred Animals, etc.

A good deal of progress has been made in the past 20 years in the field of hen breeding, and control of the egg production is now enforced on chicken farms which produce breeding animals for sale. There also exist special control centers to which the breeding farms may send groups of hens for the purpose of obtaining an official record of the egg production during the first laying year. The production of chickens for slaughter has also increased considerably. The most important breed kept by Swedish poultry farmers is the white leghorn.

The first import of Canadian silver foxes to Sweden took place in 1924. According to a count of furred animals made in 1937, there existed in the country 3,100

silver fox farms with altogether 132,000 silver foxes. The number of blue foxes that year was 26,000; the minks numbered 41,000 and nutrias 8,000. The breeding of furred animals is most often carried on as a subsidiary to farming, especially in the northern sections of the country. The fox and mink farms provide good outlets for the inferior meat and waste products of the slaughter houses.

On smaller farms rabbit breeding is also carried on to a certain extent. Some rabbit meat is exported to England, and a special rabbit slaughter house has been established in Gothenburg for this purpose.

Swedish animal husbandry and animal production have thus made great progress since the turn of the century. The volume of production has increased, and the quality of the products improved, despite the fact that economic conditions have fluctuated and at times been rather unfavorable. Sweden has now an export surplus of butter, pork, and eggs, as well as of pelts. The export surplus of butter and pork, however, is maintained largely by the import of foreign feed. Due to the fact that low prices are obtained in the export market—especially for butter—attempts are being made to limit the export volume and as far as possible base the animal production on domestic feed. By improving the yield of pasture and grazing land from which a feed rich in protein and other nutrients is obtained for cattle, efforts are being made

to eliminate the import of oil cakes and other feed concentrates.

The genetic quality of the farm animals has been improved by breeding, and by better feeding and care the animals' production capacity has been better utilized. Selection and efficient feeding combined have contributed to a substantial rise in production, which, especially in the case of cattle, has been obtained without any notable increase in the number of animals.

Agricultural Research and Education

by Ivar Johansson

The Royal Academy of Agriculture was founded in 1811 and shortly afterwards research in agronomy was included in its program. In the middle of the 19th century the Academy obtained an experimental farm outside Stockholm and to this was later added a chemical laboratory. In 1907 a state institution for agricultural research, called the Central Agricultural Experiment Station, was established on the experimental field belonging to the agricultural Academy. The work at this institute was originally divided into different departments, viz. agronomy, animal husbandry and dairying, agricultural chemistry, botany, entomology, and bacteriology. In 1932 a reorganization of the entire institute was begun, and most of the departments were transferred or will be transferred to the *Agricultural College* established that year outside Upsala.

Around the middle of the 19th century two agricultural institutes were established by the State, *Ultuna* in 1848 and *Alnarp* in 1862. Both of these were intended chiefly as educational institutions, but agricultural research has

to some extent been carried on there. In 1932 they were merged in the College of Agriculture. In the 'eighties were established through private initiative the *Swedish Plant Breeding Station* and the *Peat-land Cultivation Society*, both of which have played an important part in the development of Swedish agriculture—especially the former. Subsequently, several other research institutions were founded, of which the most outstanding will be briefly described.

The *Agricultural College* at Upsala has about 15 departments for instruction and research and, in addition, two departments for more practical experimental work, one for agriculture and the other for animal husbandry. The results of the research carried on at the College are published in its annals ("Annals of the Agricultural College of Sweden"). On the campus of the Agricultural College but quite independent of it, is located the headquarters of the recently established *Swedish Grassland and Peat Cultivation Society*, which is active in experimental and educational work relating to grazing and pasture land as well as the utilization of the organogenic soil. This Society was formed by merging the Swedish Grassland Society, founded 1916, and the Peat-land Cultivation Society.

Immediately outside Stockholm is situated the *State Institute for the Protection of Plants* and the *State Seed Testing Institute*. The former is organized in three departments: botany, zoology, and information and control.

Both these institutions carry on experimental and research work in their respective fields.

The *Institute for Animal Breeding,* located on the Viad Estate about 40 miles south of Stockholm, was founded in 1928 by donated funds. Its purpose is to carry out biological research in breeding for the development and testing of new methods, and also experimental breeding in order to develop a stock of farm animals economically superior to those now available.

The *Swedish Plant Breeding Station* at Svalöv has already been mentioned. Its primary object is to carry on practical plant breeding, but extensive research in the field of plant genetics is also undertaken here. The work at Svalöv is divided into different departments for different plant species, chromosome research, etc. Several branch stations are located in various parts of the country. It is estimated that by plant breeding Swedish agriculture has increased its annual returns for grain alone by more than 50 million kronor. The total cost of the plant breeding work is about ½ million kronor a year, of which the state pays about half.

The results of the research and experimental work carried on in Sweden and other countries should naturally be applied to farming as rapidly as possible, and for this object educational institutions of various kinds exist. The highest education in the field of agriculture is given at the *Agricultural College* at which courses leading to a degree of Bachelor of Science in Agriculture are divided along three different lines, viz. agronomy,

animal husbandry, and agricultural economics. The entrance requirements for the Agricultural College are a matriculation examination, or equivalent knowledge in a certain number of subjects, corresponding more or less to junior college in the U. S. A., and 3 years of practical farming. The course leading to a B. S. in Agriculture ordinarily takes 3½ to 4 years, after which the student may continue his studies towards a higher degree. Advanced training in Dairying and Horticulture is given at Alnarp in southern Sweden, where research in these fields is also carried on. The graduates of these schools generally become teachers in the lower agricultural schools, county advisers, or are engaged in some similar public work.

Instruction of future farmers is given in the lower agricultural schools, of which there are several different kinds. At the *Farm Schools* only theoretical instruction is offered in courses lasting 5 or 9 months. These schools are primarily intended for farmers' sons who expect to become farmers themselves. A number of shorter courses are also given here in such subjects as milk recording, etc. In addition, there are *Agricultural Schools* with one or two year courses which generally include theoretical instruction in the winter and practical work in the summer. These schools are intended chiefly to train managers for large or medium-sized farms, but many who expect to become farm owners themselves frequently attend them. In 1937 there were 12 Agricultural Schools in Sweden along with 41 Farm Schools, with 352 and 1554 pupils

respectively. A one-year continuation course is offered at Alnarp for students who have successfully passed the other schools and have had good practical experience in farming. This course is intended for managers or superintendents of large farms. For women there are special *Schools of Home Economics* with courses in domestic science and economics, small animal husbandry, gardening, etc., which last 3 or 5 months. In 1937 a total number of 1,215 pupils received instruction in these schools. In addition, there exist a number of lower dairy and gardening schools.

All counties employ county advisers for the purpose of assisting the farmers with advice and information. Each county usually has one or more advisers for agronomy, one for animal husbandry, one for horticulture, and one woman adviser for home economy. These advisers are paid chiefly by the State, as is the case with the teachers at the Farm Schools.

The Swedish farmer has become much more skillful since the turn of the century, and as a consequence the yield of the soil as well as of the animals has greatly increased. His heightened efficiency is to a large degree the result of the progress made in pure science and agricultural research, but the Farmers' Schools and the advisory work has undoubtedly been of inestimable value in transmitting the new knowledge to the tillers of the soil. The results of scientific investigations are common property; they are not patented or stopped by custom barriers, and for this reason the findings of the world

have been utilized in Swedish agricultural education. In relation to its size and resources Sweden's contribution to agricultural research may be regarded as satisfactory, but of all the results of international research which have carried agriculture forward, naturally only a small share has been contributed by this country. The relatively high efficiency of the farmers in Sweden, as well as in the other Scandinavian countries, is chiefly due to the fact that instruction in agriculture began early in the northern states and that agricultural education has throughout been well organized.

Agriculture and the Market Farmer Cooperation

by L. Nanneson

In connection with the great increase in the production volume of agriculture and the decline of the relative proportion of the farming population to the total population, Swedish agriculture has become highly dependent on the market. The self-sufficiency which dominated Swedish agriculture far into the 19th century, when the farm produce was consumed chiefly by the farmers' families themselves, has been replaced by an exchange economy. According to investigations carried out on farms controlled by bookkeeping it has been estimated that on large and medium-sized farms 80 to 90 percent, and on smaller farms about 50 to 60 percent, of the farm products are marketed. The sales value of farm produce per hectare naturally varies within wide limits in accordance with the volume of production and business conditions. It is not unusual, however, for the output of well-run farms to exceed 500 kronor per hectare in the southern parts of the country, and 300 kronor per hectare in the central parts. Due to the more intensive agriculture on the smaller farms and the generally higher animal produc-

tion, these frequently show a greater return per hectare than the large farms.

But also in their capacity of buyers of supplies, commercial fertilizers, feed concentrates, machines and equipment, etc., Swedish farmers are dependent on the market and its fluctuating prices.

It is characteristic of Swedish agriculture to-day that the marketing of farm products and the purchasing of farm supplies are to a major extent handled cooperatively by the farmers' own associations.

Agricultural cooperation in Sweden extends back to the 'eighties of the last century, when the first cooperative creameries were established. Subsequently, other cooperative enterprises were formed, e.g. purchasing organizations for supplies, slaughter associations, fruit marketing associations, credit societies or farm banks. The farmers' interest in organization has vacillated considerably during the decades following the establishment of the first cooperative associations. There have been periods of rapid development, followed by times of standstill and, in some sections of the country, even a backsliding in interest.

However, during recent years—or to be more exact since 1930—agricultural cooperation has made great advances. New organizations have been formed, the membership has increased tremendously, and a conscious effort has been made to build up strong and sound organizations capable of maintaining and protecting the rightful interests of agriculture in the market.

The work of rationalization and consolidation has been carried out along two lines. First, by setting up standard by-laws for the organizations, by educational activities such as courses for the members and association officers, by introducing more efficient bookkeeping, operating control and auditing, the activities of the individual associations have been rationalized. Secondly, a good deal of work has been expended in consolidating the individual organizations within each field of activity to obtain an intimate economic cooperation in the market.

For the latter purpose the small local associations have been combined into district federations, and these in turn into national organizations, one for each branch. In this work greater stress than formerly has been placed on the importance of agricultural cooperation as a means of supporting and regulating the prices of farm produce throughout the entire country. Thus the previous competition in the market between individual farmers and small local associations has been replaced by a firmly organized marketing cooperation.

However, before entering on a detailed account of the progress made in organization in the past decade, it should be emphasized that in the Swedish farmers' cooperatives the members usually are liable for the management of their association only to the extent of their paid-in share-capital, limited liability being obligatory only for credit societies or farm banks. The district federations and the national organizations are also business enterprises and not only educational bodies.

In the following a short description of the structure of the most important associations, their scope and activities will be presented.

Dairy Organization

The local dairy cooperatives—over 700 of them—are usually combined by county into a district creamery association, sometimes in the form of a federation, sometimes as a single concern embracing many creameries. These organizations form the *Swedish Dairies' Association* (Svenska Mejeriernas Riksförening), with headquarters in Stockholm. Private dairies, too, may become members of the district federation and thus allied with the national organization.

The Swedish Dairies' Association was formed in 1932 and now controls about 90 percent of the total volume of milk weighed in at all the creameries in the country. In some areas every milk selling farmer is a member. The national organization has taken over practically all the export of butter which was previously handled by a great number of competing business interests, and one of its chief objects is to build up an efficient cooperation for the domestic sale of whole milk and creamery products to consumers. In this it has scored a considerable success, and previous competition in the domestic market with its frequent depressive effects on prices has been eliminated. The importance of this is readily perceived when considering the fact that milk is the foremost marketable product of Swedish agriculture, and a

difference in price of but 1 öre means 30 million kronor per year to Swedish farmers.

The national organization also endeavors to raise the efficiency of the creamery business. It works towards the centralization of dairying by consolidating small creameries into larger production units, it supervises the dairy advisers, runs a dairy architectural office, serves as purchasing agent for creamery supplies and does auditing and production analysis for the dairies.

Finally, it supervises the so-called state milk regulation. For this purpose it collects a tax on all milk sold, and the funds thus obtained—together with certain tariffs on margarine and imported feed concentrates stipulated by Parliament—are used to support the price of milk and equalize the price margin between production milk and consumption milk. This regulation of the milk market plays a very important role in insuring a satisfactory price for the producers.

Slaughterhouse Organization

Sweden is one of the few countries of the world possessing a national cooperative organization for the entire livestock market. This organization is made up of slaughtering associations usually comprising one or several counties. The by-laws of these associations pledge the members to deliver all animals marketed for slaughter, cattle, swine, sheep, etc., to their associations. The 33 district associations are united in the *Swedish Federation of Meat Packing Societies* (Sveriges Slak-

teriförbund), formed in 1934, and which now has a membership of over 210,000. This means that of 300,000 Swedish farmers with more than 2 hectares of ploughed land two-thirds are members of this organization; in certain areas all the farmers have joined.

The animals delivered to the associations are minutely classified, and the price to the farmers is determined according to the weight and quality of the carcass.

The local associations handle the sale of meat products in their respective territories. The surplus of the individual organizations is taken over by the National Federation, which serves as the central sales organ for the largest inland markets and the export trade.

By regulating the supply of the different markets, by cold storage and freezing in periods of over-production, and by reducing the costs of distribution, the Federation has become the price regulating organ for this important market of Swedish agriculture. In 1937 the slaughter associations paid out 156 million kronor to the members.

Egg Marketing Organization

Eggs are delivered to local marketing societies. These are usually combined by counties in so-called *egg centrals* which in turn form the national organization in this branch, the *Swedish Association of Egg Marketing Societies* (Svenska Ägghandelsförbundet). This organization takes over the surplus of the egg centrals for marketing in areas with a deficient supply, or for export. The National organization, which works towards raising

the quality of the eggs intended for marketing and towards reducing the distribution costs, had a turnover in 1937 of 12.3 million kronor.

Fruit Marketing Organization.

The fruit marketing associations in the different counties, the so-called *fruit centrals*, are combined into a national organization, the *Swedish Federation of Fruit Marketing Societies* (Riksförbundet Svensk Frukt), formed in 1935, and which had a turnover of 1.6 million kronor in 1937. Present efforts are directed towards recruiting also private orchardists and truck gardeners for members of the organization.

Organization for the Marketing of Forest Products.

For the sale of forest products organizations have been formed throughout the country which are united in the *National Association of Forest Owners Societies* (Sveriges Skogsägareföreningars Riksförbund), established in 1932. This organization has not yet reached the desired scope, but it is expected to become of great value for the forest owning farmers. Nevertheless, in 1937 it had a turnover of close to 20 million kronor.

Purchasing and Marketing Organizations.

These handle the buying of supplies for the members, such as fertilizers, feed concentrates, seed, etc., and the sale of grain. The local bodies are usually combined into

central county associations and these in turn form the national organization in this branch, the *National Union of Swedish Farmers* (Svenska Lantmännens Riksförbund), established in 1905. This organization cooperates with special grain elevator societies and is itself owner of a large number of elevators. In recent years the Union has played an increasingly important part in regulating the grain market. In 1937 it had a turnover of 114.6 million kronor.

Farm Credit Associations

Credit societies have existed in Sweden since the middle of the 19th century for the purpose of providing first mortgages on farm property, and these organizations have been of great importance for the sound development in this field. The first local credit societies however, were founded in 1915 to provide agricultural operating credits, and to take care of farmers' savings and to make these interest bearing by supplying loans to the farmer members themselves. The agricultural banking system is based on local farm banks. A farmer may become a member of such a bank by paying a share-capital figured per 500 kronor of the assessed value of the farm holdings and amounting to at least 5 kronor per share. He may obtain operating credits to a maximum amount of 200 kronor per share. First mortgages may also be had up to 60 percent of the assessed value. The members are personally liable for the obligations of the bank to at least 50 kronor per share.

The farm banks are combined into district societies, of which other cooperatives may also become members. The district society supplies the members with necessary credit and it also has the right to carry on a loan business on the same basis as ordinary commercial banks.

The national organ for the entire credit set-up is the *Swedish Federation of Rural Credit Societies* (Svenska Jordbrukskreditkassan). It secures the necessary loans for carrying on the credit business of the district societies, leads the organization work, controls and audits the locals.

In 1937 there were 185 farm banks with 93,000 members, deposits from members amounted to 47.9 million kronor, and total loans to 88.8 million kronor.

Among other organizations whose purpose is the protection of the marketing interests of the farmers may be mentioned the *Swedish Sugar Beet Growers' Association* and the *Swedish Distillers' Association*. The former is the organization of the beet growers of the country. It has no sugar refineries but guards the interests of the beet growers in their relation to the sugar industry and the Government. The *Distillers' Association* is a combine of the 100 potato distillers of the country, of which the greatest number are cooperative enterprises.

All the national organizations mentioned above are affiliated with the *General Agricultural Society of Sweden*, which is a central educational organ for agricultural cooperation. It has on its program the promo-

tion of the sound development of the cooperative movement through research and propaganda activities.

In order to promote good collaboration with the extensive Swedish consumer cooperative movement, a committee has been formed consisting of a certain number of delegates from both farmer and consumer cooperatives. A similar joint committee has been established by farmer cooperatives and private retailers. In this way agreements are reached as to the proper division of the functions of the various marketing organs and their mutual business relations.

Swedish Export of Agricultural Products

by L. Nanneson

The major portion of the Swedish agricultural production is sold on the domestic market, and foreign commerce with farm produce is not very extensive. In years with normal harvest the country is practically self-sufficient in respect to grain, potatoes, and sugar, due to the increase in production described above. For animal products there is a small export surplus which in 1937 was as follows:

Butter	23.5	million kilos
Pork	11.9	» »
Eggs	51.0	millions
Pigs	29.3	thousands
Cattle	7.8	»

However, the export surplus of animal products is relatively small in comparison with the total output. For instance, the volume of milk used for the quantity of export butter given above is equivalent to only about 14 percent of the total milk production.

Quite a considerable amount of feed is imported for maintaining the animal production, oil cakes for supplementing the protein content of the domestic fodder, and corn for pig feeding. In 1937 more than 500 million kilos of feed concentrates were imported. The major portion of Sweden's consumption of commercial fertilizer is also obtained abroad. It should be mentioned, however, that a large portion of the fat supply is also dependent on import, inasmuch as the 50 million kilos of margarine consumed annually in Sweden are manufactured from imported raw material. A reduction of this import in favor of the country's own butter production is to-day one of the most acute and outstanding problems confronting Swedish agricultural policy.

The Economic Results of Agriculture

by L. Nanneson

Sweden's northerly position and its sometime meager and hard-worked soil puts great demands on the industriousness of the agricultural population. The returns which the farmer receives for his hard work are often rather small measured against the income of other categories of workers. However, in recent years many efforts have been made to improve the skill of the farmers. From the account given above it is apparent that Swedish agriculture in respect to the size of the harvests and the technical production results of farming and animal husbandry may satisfactorily compare with the majority of countries more favored by nature.

What, then, is the present income standard of Swedish farmers? This is a rather difficult question to answer, but in concluding we shall attempt to give some information which may prove enlightening.

The last agricultural crisis hit Swedish agriculture, as well as that of the rest of the world, very severely. The prices of farm produce declined catastrophically in 1929

and the following years. When the bottom was reached in 1932—1933 the general index for agricultural prices lay more than 40 percent below the average level for 1924—1929. The result of this was a decline in the interest earning capacity of agriculture and executive sales of farm property were all too frequent. The economic situation became especially pressing for farmers with large debts.

However, by government measures for supporting the domestic price level of agricultural products and by the increasing influence of farmer cooperation in the market, the position of agriculture gradually improved. The farmers' own attempts to rationalize the operations, and the relatively good harvests for a number of consecutive years have, in addition to the general prosperity of the country, considerably increased the profitableness of farming. As an example of this improvement we give below some figures for the interest earning capacity of the agricultural capital investment of farms controlled by bookkeeping. The area of such farms comprises about 1 percent of the total farms of the country. Naturally, the interest earnings of individual farms vary considerably, but the averages below should give a rather correct expression of the general tendency.

INTEREST EARNING CAPACITY OF FARM INVESTMENTS

1931—1932	.....	0.2 %
1932—1933	.....	0.7 „
1933—1934	.....	1.5 „

1934—1935	.....	4.0 %
1935—1936	.....	3.7 „
1936—1937	.....	3.8 „

From a loss during 1931—1932 conditions have improved so that the interest earning capacity during the last 3 years has increased to about 4 percent, i. e. it has surpassed the current interest rate for real estate, which is about 3 to 3.5 percent.

An expression of the increased profitableness of agriculture is found in the climbing prices of farm property. The price per hectare of cultivated land now averages about 1,000 kronor for the entire country, varying all the way from over 2,000 kronor per hectare in the most fertile areas to less than 600 kronor per hectare in sections where the real estate values are lowest.

However, the improvement in the prices obtained for farm produce, and the general industrial prosperity which has resulted in a strong competition for labor, have led to a marked increase in the wages paid in agriculture. The magnitude of this increase is apparent from the fact that the hourly wage stipulated by collective agreement between employer and employee organizations for an able-bodied male worker has in 3 years risen from 46 öre to 65 öre, or more than 40 percent. At the same time the working hours have been reduced by parliamentary legislation in 1936 and 1937, and on farms hiring at least 3 male workers an 8-hour working day is in force. During the summer months the working time may be

extended to 54 hours per week, while in winter it is reduced to 41 or 46 hours.

It is expected that the improvements in wages cited above and the reduction in working hours, as well as other means for raising the social level of the agricultural workers, e. g. by improvements in housing and a legal two weeks vacation each year, will result in retaining a skilled and high quality labor within agriculture. But this rather substantial increase in wages taxes greatly the ability of the farmer to adjust himself to the new situation, the changes in the prices of agricultural products not having been sufficient to offset the increase in wages. For this reason extensive work is going on in Swedish agriculture to rationalize the production by an increased use of machines, a more efficient supervision, and more effective methods of operation, thereby raising the human productivity, i. e. the production volume per working hour. Excellent results in this respect have been achieved on many farms, and further progress is undoubtedly on the way. This process of rationalization, however, places great demands on employers and supervisors, and requires considerable capital investments.

From this account it should be apparent that Swedish agriculture of to-day is passing through a period of intensive reorganization and rationalization. By further improvements in farming technique it is sought to in-

crease the production, to reduce the production costs and to insure the country's supply of food. By a continued development and strengthening of agricultural organization the farmers' rightful economic interests in the market will be protected so that they can receive their proper share of the national income.

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THE FOREST

SWEDEN'S
"GREEN GOLD"

by

Thorsten Streyffert

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THE FOREST - SWEDENS "GREEN GOLD"

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Introduction

Sweden is one of the most wooded countries in the world.

The Swedish export of forest products, lumber, wood pulp, and paper, is next to Canada's the largest in the world.

The Swedish export of forest products to the United States enables Sweden to import American products to a value of 30—40 million dollars each year.

Swedish forests are a primary source of wealth which supplies work to hundreds of thousands. Together with the Swedish iron ore, water power, and cultivated soil, the forests constitute the foundation on which the present prosperity of the Swedish people has been built.

This happy result has been brought about by the interplay of the principal natural resources:

The water power has greatly aided the processing of the timber into lumber, pulp, and paper.

The forest has delivered the charcoal needed for the refining of ore into the steel for which Sweden is famous.

The cultivated soil extending into the forest areas

has molded a hardy population, accustomed to a life in the woods and highly skilled in logging.

A factor of tremendous importance for the welfare of the entire nation, the care of the forests, has become the concern of the Swedish people in order that the forest yield be sustained and further improved.

The purpose of this booklet is to give a brief account of the Swedish forests, their maintenance and care, as well as a description of the multifarious industries which base their production thereon.

The Swedish Forest

One of the most characteristic features of the Swedish landscape, the forests cover roughly half the total area of the country. However, in the southern and central parts of Sweden they do not possess the same economic importance as in the north: in these more densely settled areas agriculture and industry are the main sources of income for the people. It is not until the Dal River is crossed that the real Swedish forest region begins, and the forest becomes all-important as the backbone of industry and the principal source of income for hundreds of thousands. The Dal River, as a matter of fact, forms the line of demarcation between the two principal forest regions in Sweden, the *Northern and Southern Coniferous Regions*, and at the same time it also forms the northern limit of the oak (Quercus pedunculata).

This should not be understood as meaning that the southern forest belt is lacking in major importance. On the contrary, 55 percent of the total area of southern and central Sweden is wooded, and of a total forest area

of 57.3 million acres, about one-third is located south of the Dal River. From the point of view of climate, too, these forests are more favorably situated, and they account for nearly half of the total annual growth. This southern region is thus worthy of a brief description, although our principal interest will be centered on the northern woods.

A visitor travelling through the southern parts of Sweden will find a landscape where fertile farm land is interspersed with wooded mountain ranges, the ridges displaying the bare primary rock which serves as the foundation of the entire Scandinavian Peninsula. A closer examination of this bare rock will reveal traces left by glaciers many thousands of years ago, and a geologist would immediately deduce that the loose earth of the mountain ridges had been scooped up by the advancing glaciers and deposited in the valleys below. Following the ice age, this as well as many other parts of Sweden was submerged by the post-glacial sea which further polished the granite ledges planed by the inland ice. On the bottom of this sea were deposited layers of clay which in our days constitute the fertile farm land of the country.

The glaciers and the subsequent post-glacial clay deposits determined the distribution of forest and arable land in present-day Sweden. On the stone-bound areas, the forest reigns, on the fertile clays farming holds sway. In the great lakes region in central Sweden and along the coasts, which once formed a part of the large post-

glacial sea, the clay deposits are more prevalent than in the North, giving rise to an extensive agriculture. In the plains the forests have occasionally been reduced to scattered groves.

North of the great lakes, in the central part of Sweden, begins an important mining and forest area, the so-called *Bergslagen*. This is a belt rich in iron ore sweeping across the country from Lake Mälaren in the east to the Province of Värmland in the west. But Bergslagen is not only rich in ore, it is also endowed with a great wealth of forests. Formerly, they were utilized mainly in mining. Before the advent of gun powder it was customary to heat the rock and then cool it rapidly by pouring water over it, the contraction causing the ore bearing rock to fracture. Obviously, enormous quantities of wood were required by this method of blasting, but great volumes of timber were also converted into charcoal to be used in the blast furnaces for reducing the ore into pig iron. During the 17th and 18th centuries Bergslagen furnished the world with a considerable portion of its supply of iron and steel, and it was in these days that the foundation was laid for the international reputation of Swedish steel. Present day steel mills in Bergslagen still use charcoal in steel making, and "charcoaling" is an important source of employment in this part of Sweden.

A considerable amount of the timber in Bergslagen is owned by the old iron works, now consolidated into modern corporations producing, besides iron and steel,

lumber and pulp. Their forests are considered to be the best cared for in the entire country, and may well serve as models for Swedish forestry at its best.

An American visitor to these company forests would probably remark on the relatively few varieties of trees making up the woods. The Scotch Pine (Pinus silvestris) and Norway Spruce (Picea excelsa) are, as a matter of fact, the only conifers found here—as in practically all Swedish forests. They are often accompanied by some hardwoods, of which the birch (Betula verrucosa and Betula pubescens) is the most common. These broad-leaved trees are easily recognized by their white trunks which relieve the serious and stark character of the coniferous woods in their pure state. The birches become especially prominent in the proximity of the farms, where they constitute the characteristic tree in the wooded grazing lands ("hagar"), forming the transition between the forest and the settled farm country. To further cattle grazing the farmers have since of old kept out the conifers from these wooded meadows where, instead, the birch is accompanied by other deciduous trees, such as aspen (Populus tremula), oak (Quercus pendunculata), linden (Tilia parvifolia), maple (Acer platanoides), and others.

But let us return to the conifers. Characteristic of Bergslagen are the dense stands formed by pine and spruce, causing these forests to be relatively rich in timber. They give a high yield through thinnings and at the final "harvest", which occurs when the trees

have reached an age of 80—100 years. The density of the stands is a good expression of the excellent care the forests in this part of Sweden have generally received, and this again is due to the farsighted forest policy of the old mining companies. As previously mentioned, iron production in Bergslagen has always been dependent on the supply of charcoal, in view of which the mill owners became interested in the care of their forests at a very early stage. Lately, much money has been invested in expensive processing plants for forest products and this has further stimulated the interest in good forest management. Naturally, this applies first of all to the large companies, but their example has inspired the forest-owning farmers of Bergslagen to better management, with the result that on the whole the farmers' forests are better cared for here than elsewhere in Sweden. Special attention has been given to methods of insuring a satisfactory regrowth, and large areas have been sown or planted. Many of these planted forests are now 60 or 70 years old and are rapidly approaching the "harvesting" age.

In Bergslagen the conifers probably reach a better development than anywhere else in Sweden. When fully grown they attain a height of about 70 or 90 feet, sometimes 100 feet or even more. The diameter at breast height varies considerably, but for 80 or 100 year old trees it generally lies between 12 and 18 inches. As even the smallest trees can be utilized for charcoal in this area, the beneficial thinnings so essential to the

proper care of the forests have been carried out to a much larger extent here than elsewhere in Sweden, which largely accounts for the fine state of the Bergslagen forests. Since the advent of the pulp industry it has also been possible to use trees with a diameter at breast height of but 3 or 4 inches for the manufacture of wood pulp.

After this brief description of some of the major aspects of the southern forest region we shall leave the south and proceed to Norrland. In the southern part of this gigantic domain the forests resemble those of Bergslagen, and no wonder, because they constitute but the northern extensions of the central Swedish forest belt. But even though the size of the trees remains the same as in Bergslagen, they require a longer time to reach their full growth. This, however, is not entirely a disadvantage because the timber becomes more solid and lasting than that grown in the central or southern woods, thereby increasing its value. As a matter of fact, lumber from timber grown in the southern parts of the Northern Coniferous Regions has since of old been considered among the best found in the international market.

The farther north one proceeds in Norrland the slower the growth of the trees becomes, and the smaller the size. In Lapland, the northernmost part of Norrland, the trees grow scattered in open stands; they are low and seldom reach a height exceeding 50 feet, despite the fact that in the virgin forests their age is frequently more than 200 years. This part of Sweden is cut by

the Arctic Circle, which most often is considered the northern limit for forest growth. But in Sweden the forests continue north of the Arctic Circle due to the proximity of the Gulf Stream with its beneficial effects on the climate in Scandinavia. However, where the land rises to any considerable heights the influence of the Gulf Stream is insufficient to provide the necessary warmth for forest vegetation, and the Lapland mountains are barren of trees.

The transition between the forests and the barren mountain region is formed by the Alpine Birch Region which occupies a belt of varying width. The upper limit of the forest region in northernmost Lapland is reached at 1,700 or 2,500 feet, depending on local conditions in respect to soil, exposure, etc. Above this belt begins the vast expanse of barren mountains which follow the Norwegian border, narrowing towards the south. They extend all the way to the northern part of the Province of Dalarna, where the forest ascends to a height of about 3,200 feet.

The forest belt situated between the barren mountains in the west and the Gulf of Bothnia in the east has a width of about 150 miles and a length of about 600 miles. Of this area of about 90,000 square miles, approximately three-quarters constitutes productive forest land. The remainder is mostly bogs, which are very extensive in the neighbourhood of the mountains due to the heavy rainfall combined with low temperatures, causing the extensive formation of swamps and peat.

As a matter of fact, it is possible to recognize a transition belt comprised chiefly of bogs, between the forest belt proper and the mountains. But bogs and swampy forest land are also characteristic features of the forest belt.

Only a small part of this northern area is utilized for farming. The major portion of the cultivated land is found along the coast, confined to the post-glacial deposits, as was the case also in the southern parts of the country. From the coast the cultivated land follows the river valleys into the interior where it encircles the large lakes. Thereby the interior of the timber belt has obtained a settled population which, although small in number, has been of great importance for the exploitation of these forests due to its hardiness and skill in forest work.

Up to about 80 years ago this forest region was practically undisturbed. It was virgin forest—enormous ranges of pine and spruce never touched by the axe. To be sure, water-driven sawmills existed in the lower parts of the river valleys, but these mills got their timber from the forests in the proximity of the water courses. Only the finest and the largest pine timber was considered worthy of being sawed up, and the spruce was thought to be lacking in value altogether. The timber was floated down the rivers, which had been freed from the worst obstacles. The total production of these mills was quite small compared to present figures, and in 1850 the total export of lumber from

Sweden was only about 180,000 M.B.F.,[1] of which the larger portion was from mills in southern and western parts of the country.

However, at this time the first steam-driven sawmills began to be established at the rivers in southern Norrland, and then a new era in the exploitation of the Norrland forests set in. For the first time large scale production was introduced in this region, although the early steam mills naturally were quite primitive according to modern conceptions. But the steam mills were independent of water power and could be located at the river outlets, permitting the lumber to be loaded directly on ocean going vessels. At about this time, too, sailing vessels began to be replaced by steamers, which resulted in a reduction of the freight charges.

The golden age of the Swedish sawmill industry set in a few years later when the lumber tariffs in England and France, the chief import countries, were considerably reduced and subsequently abolished altogether (by France in 1865 and England in 1866). The boom continued for a few decades until the lumber production had caught up with the demand. The reason for this increased demand for lumber was the industrial revolution which had commenced in England in the middle of the 18th century and then spread rapidly throughout Europe, causing an enormous increase in business. Lumber as well as other raw material was consumed at a rapidly increasing rate, and the virgin forests in north-

[1] M.B.F. = thousands of Board Feet.

ern Sweden were the nearest sources of good quality lumber. Production and export increased. In 1900 the total Swedish export had reached the 2 million M.B.F. mark and two-thirds of this came from the northern woods. The export remained at that figure until the World War, when it began to drop—permanently as it appears. During the last years it has been around 1,600,000 M.B.F. The reason for this decline lies in the scarcity of large dimension saw-timber in the northern woods due to the gradual depletion of the virgin forests. Thereby Sweden has had to give up its first place in the export market to Finland, and Russia, too, has once again begun to be a serious competitor in the international lumber market.

In the meanwhile, however, a new industry has grown up in Sweden, principally in Norrland, which more than offsets the losses in the lumber field. This newcomer is the pulp industry. What makes this industry such a valuable factor in the exploitation of the forests is its use of the smaller sizes of timber, which cannot be used by the sawmill industry. While technically it is hardly possible to saw timber with a top diameter of less than 5 inches, it is customary to take out the pulp wood to a diameter of 3 to 4 inches—even 2½ inches—at a minimum length of 10 or 12 feet. The rapidly increasing costs of felling and transport per cubic foot of raw material prevent the logging of smaller sizes of logs for the pulp industry.

The first Swedish pulp mill was established in 1857 at

Trollhättan, a town in south-west Sweden, and, shortly after, mills also began to be erected in Norrland. The first pulp was manufactured mechanically—by grinding the wood into mechanical pulp—but some years later chemical processes were invented, by means of which a better pulp was obtained. Swedish engineers contributed greatly to the development of the chemical processes and one of them, C. D. Ekman, succeeded in 1871 in producing the first sulphite pulp at the Bergvik mill located in southern Norrland. A few years later the sulphate industry, representing the second major division of the chemical pulp industry, reached Norrland.

At first the development of the pulp industry was rather slow. During the years 1896—1900 the yearly production had increased to an average of 285,000 tons. In 1937, up to now the greatest year in the pulp industry, the production was 3,885,000 tons, of which 809,000 tons were mechanical pulp, 1,803,000 sulphite pulp, and 1,273,000 tons sulphate pulp. Of this, by far the major share was produced by Norrland mills and the greatest part was exported.

The tremendous expansion of the pulp and sawmill industry has put a great demand on the supply of raw material, and this has considerably affected the appearance of the Norrland forests. Still, thirty years ago a trip through the forest belt in upper Norrland would have given the impression of travelling through a virgin forest. Actually it was no longer a virgin forest in the

proper sense of the word. The large timber had already been cut, and the remaining forest still consisted to a large extent of overmature stands covered with lichen, and partly decayed. Windfalls and dead trees were frequent. This was typical of forests exploited for the purpose of supplying the sawmill industry with large timber.

To-day, these forests present an altogether different appearance. During the past 30 years they have passed through a metamorphosis to the better. The reason for this is primarily to be found in the growth of the pulp industry, which has created better opportunities for utilizing the small trees which previously could not be used by the sawmill industry. All this has meant that the cuttings have been integrated to an increasing degree with the demands of silviculture. The trees to be cut are now chosen according to silvicultural requirements and not entirely according to size. Thus, overmature and damaged trees are first of all removed, and the trees capable of further growth and development are retained. At the same time the regrowth is insured by leaving seed trees and by generally locating the cutting areas so that the regeneration is benefited in the best possible manner. Finally, the possibility of utilizing the smaller trees has promoted thinnings advantageous to the rather extensive younger stands which have grown up after previous forest fires.

This development has been coincident with an increasing interest in silviculture in the country at large.

The driving power has been the public activity in promoting forest production and the forest legislation, and the first important step was the »reproduction» law of 1903. The state has also furthered the interest in silviculture by extensive propaganda and educational activities.

An account of all these activities would lead us too far afield. Suffice it to say that the law of 1903 stipulated for the safeguarding of the regrowth of cut-over areas. This law was of fundamental importance inasmuch as it insured the future of the Swedish forest. Another step forward was taken in 1923 when the current forest law was adopted, whereby cuttings in younger forests were forbidden except for necessary thinnings.

In order to enforce the forest laws Forest Conservation Boards were established in all counties. Voluntary in nature, forest owners have a voice in these boards which are also entrusted with educational and propaganda activities. Nowadays the activities of the Forest Boards are centered more on the latter work rather than on enforcement. The cost of the work carried on by the Boards are centered more on the latter work rather than logged timber and, in addition, the Government supplies funds to an increasing degree. This aid is primarily directed to the farmers' forests and most of the timber logged in these is now marked before cutting by the Conservation Boards. Large areas of bogs have also been drained with the aid of the Boards,—to mention but

a few of their activities. The Government and the companies care for their own forests according to scientific methods, employing their own technically trained personnel for this purpose.

Finally, a few words should be said about the ownership of the northern forests. Originally, they were held in common by the villages for grazing and hunting. This right of ownership applied only to the adjacent woods actually utilized for these purposes. As these regions have always been sparsely settled, there were large expanses of forests to which the villages could not claim ownership. But the question of ownership did not become acute until the state claimed possession of the unused wilderness between the villages. This happened for the first time as early as the 16th century, when King Gustav Vasa issued a decree declaring that "unused land belonged to God, the King, and the Swedish Crown". This started the long struggle between the state and the farmers for the ownership of the unclaimed forests, which lasted for several centuries and resulted in the present division of private and public land. The Government claimed about one-fourth of the productive forest areas in this region. The major portion of the state forests are situated in Lapland, i.e. in the very thinly settled northern and interior parts of the forest belt.

A change in ownership occurred, however, when the forest industries began to catch their stride. Great areas of farmer forests came into the hands of companies

which were anxious to insure their supply of raw material and protect their large investments in plant. At first the companies contracted for logging rights for a period generally of 50 years. However, the duration of these rights became seriously reduced by legislation, and about 1870 the large corporations began to acquire forests to which they obtained full ownership. When purchasing forest land it was customary to take over agricultural property, too, which meant that independent farmers becamse tenants of the lumber companies. As these purchases greatly increased, the state became aware of the dangers following the liquidation of the independent farmer class and once again steps were taken to restrict by legislative measures the companies' acquisition of forest properties. In 1906 laws were issued against the company acquisition of forest land in Dalarna and Norrland, and subsequently this legislation was extended to embrace the entire country. The laws were later supplemented by leasehold legislation in order to protect the rights of the leaseholders against the companies. Much of the farming land has since then been sold by the lumber corporations.

The following table presents some information on the distribution of the productive forest property according to ownership. Further information in respect to stock, regrowth, etc. of the Swedish forests is given in the discussion of the National Forest Survey (p. 59).

PRODUCTIVE FOREST AREA DISTRIBUTED ACCORDING TO OWNERSHIP

Ownership	Productive forest area	Thereof in Norrland	Percent of productive forest area
	Acres	Acres	
State	10,056,000	8,359,000	18.3
Other public	3,164,000	1,677,000	5.8
Company holdings	14,145,000	9,323,000	25.8
Other private[1]	27,443,000	12,222,000	50.1
Total	54,808,000	31,583,000	100.0

»Other private forests» distributed according to size of individual holdings:

25 hectares[2]	4,345,000	893,000	7.9
25—50 ,, ...	4,994,000	1,528,000	9.1
50—200 ,, ...	10,972,000	5,659,000	20.0
200 and over	7,132,000	4,144,000	13.0

[1] Farmers' woodlots, estates, etc.

[2] One hectare is equivalent to 2.47 acres.

LOGGING

In the previous chapter we have given some of the more outstanding features of the Swedish forests. We have shown their development in the various parts of the country under the influence of climate, soil conditions, and human activities. But little has been said about the products derived from the forests.

It is a long and intricate process we are about to trace in following the journey of the Swedish timber through its multifarious stages of processing. The first phase of the long journey begins with the felling, and the subsequent log driving down to the processing plants,

from where the finished or half finished products are shipped to the markets of the world.

The logging activities take place in winter when Norrland is covered by a thick layer of snow. Lakes and water courses are frozen, and the boughs of the trees are bent under the heavy burden of snow. Silence reigns everywhere. Even humans seem to be asleep, judging from the absence of activity in the villages embedded in the snow. Twilight comes early, and the silence appears to become even deeper. It is an entirely different world from that Norrland presents in the summer. Then nature seems never to go to sleep. The sun hardly sets below the horizon before it rises again. During the light summer nights the crops grow just as well as during the day, allowing the grain to ripen and thus insuring a permanently settled population in these northerly latitudes. Even north of the Arctic Circle the barley ripens in the mild glow of the midnight sun. But in the deep of winter things are different. Then the sun hardly shows itself above the horizon. However, it doesn't become really dark; the days consist of a twilight lit up by the reflections of the snow and illuminated by the sparkling *aurora borealis*.

This, then, is Norrland in winter. Or at least it is the first impression of it. But we were wrong to assume that the people had entered a state resembling hibernation. The truth is that the humans have shifted occupation and have gone to work, so to speak, for another employer. In summer, agriculture keeps all hands oc-

cupied. But in winter the forest is the great Employer. It has been estimated that about 180,000 men are at work in the northern forests when logging activities are at their height in the middle of winter. This means, roughly speaking, that every second male rural inhabitant between the ages of 18 and 65 is occupied in logging.

But very little of these activities may be seen from the train traversing this northern wilderness. Only a small amount of the felled timber is brought down to the railroads. It is chiefly charcoal which is shipped by rail, to be transported to the iron and steel mills in far-off Bergslagen. Saw-timber and pulp-wood are floated down the water courses to the mills at the coast.

It is not difficult, however, for a visitor to reach a place where logging is in progress. Timber grows everywhere and logging is going on throughout the entire forest area, although the distances between the different cutting sites may sometimes be quite large.

The simplest way of finding a cutting site—if it is not known beforehand—is to follow the highway winding up a river valley, because all timber loads must cross the highway in order to reach their destination, the river. By taking the first "base road" which crosses the highway a visitor is sure to come, sooner or later, upon the scene of logging operations.

The base road has a more or less pronounced incline. This is no accident, because the heavily loaded timber sleds must have a good down-grade on their journey to the river. Merely a slight up-grade may seriously impair

the load capacity, limited by the pulling power of the horse harnessed to the sled. The ideal base road is one having an even and not too steep down-grade to the water course. This ideal is more closely approached in the northern timber areas than elsewhere in Sweden. Naturally, it is important to locate the base road properly, and even the untrained eye will notice after a while that it follows to a great extent bogs and other swampy ground; in other words the base road follows the natural flow of water to the river. This is the course possessing the least amount of stones and other obstacles. But on the other hand, it has certain drawbacks which may sometimes lead to serious difficulties. First of all, the bogs must be frozen in order to support the load and the horse. This is generally the case. Some years, however, the snow comes before the bogs have frozen and it then forms a protecting layer, preventing the ground from freezing. Under such conditions it is necessary to tramp down the road so that the water oozes out on the surface and freezes—a troublesome job if it has to be done for any great distance. Another disadvantage of the bog roads is their exposed location. The snow rapidly covers such roads, while those passing through the woods are much easier to keep open. A good deal of ploughing must therefore be done in order to keep the roads from being snowed under.

All these may seem but unimportant details. But roughly half the logging expense lies in the hauling —including "snaking" and loading. Timber hauling, like

so many other things in life, is a complete science embracing many important details in respect to the staking of timber roads, their icing, the choice of sleds, loading arrangements, etc., which it has taken generations to develop and requires a lifetime to learn.

With these reflections we continue along the base road. Every now and then we meet a timber load drawn by a small but sinewy and hardy horse of the North Swedish race. After skiing for a couple of miles or so we finally come upon the scene of the felling operations. Arriving at the goal we generally won't see a "clear-cutting" because only some of the trees are selected for felling. But in the still air we can easily hear where every man is working by the singing of his saw or the thud of his axe. Every logger works separately in a section where the trees intended for felling have been blazed for him. At first sight the work appears simple enough. The trees are felled by saw, after which the branches are chopped off, and the trunk "bucked" into logs of various lengths. Sometimes, certain logs are barked, as is commonly the case with the pine timber. But the work is extremely hard and demands a good constitution and—what is more important—a perfect technique in order to give a daily wage of, say, 8 or 10 kronor. The felling becomes exceptionally difficult when the snow is deep, i.e. about 3 feet or over, which is not uncommon. Then it is harder to get at the trees and a good deal of snow must be shovelled away so that they can be felled close to the ground. As a matter of

fact, in state and company forests there are fines imposed for leaving stumps above a certain height, generally 3 inches above the root collar.

But this is not the only stage in the logging activities where strict economy is practiced to prevent waste of raw material. It is followed up in every phase of the continued handling of the timber. Of particular importance in this connection is the proper scaling of the felled tree, to derive the maximum value from it.

When dividing the tree into saw-timber it is of the utmost importance to notice the quality limits of the trunk, paying particular attention to the knottiness. Simply expressed, a log, otherwise free from knots, should not be taken out so long that it will have quality reducing knots in its small end, thereby degrading all the lumber derived from it. But at the same time it is necessary to retain a certain average length of the logs, considering the cut as a whole. This average length is usually about 16 or 17 feet. Another important point to consider is the taper of the tree, a small taper giving longer logs. The logs should also as far as possible be cut at even inch or half-inch dimensions. Finally, limits are set—based on the size and quality of the timber—between the saw-timber and the pulpwood to be taken out of the trees.

In other words, the bucker must show good judgement and care in order to get the greatest possible value out of the timber. A careless bucker can very easily ruin values far exceeding his own daily wage, and the more valuable the forest the larger the values at stake. It is

therefore customary in valuable forest tracts to employ special foremen for the job of marking where the logs are to be cut. This practice has become the rule, especially in Bergslagen. The instructions for the bucking are issued by the Forest Office of the lumber companies, and are based on extensive calculations carried out by the office preliminary to each logging season.

The logging work is leased on contract to the drivers, and they in turn employ the fellers. When contracts are signed it is customary nowadays for a representative of the Loggers Union to be present to protect the interests of the workers. The wages of the fellers are also stipulated in contracts between the lumber companies and the drivers. This is in Norrland. In Bergslagen and other parts of southern Sweden the unionization of the loggers has proceeded further, and collective agreements between the lumber companies and the locals of the Loggers Federation are made up each year. These agreements fix the details of wages and working conditions, similar to the practice in industry at large.

A question of great social import, which in recent years has attracted considerable attention, is the living conditions of the loggers. Formerly the worker himself had to provide his own lodging and food. The living conditions were usually pretty bad; the lodging consisted most often of a primitive log cabin with an earthen floor and a great number of bunks around the walls. In the center was an open fire where each man prepared his food. Naturally, the food, too, left much to

be desired; it consisted mostly of fat pork of a kind known in Sweden as "American pork". However, a complete revolution has occurred in this respect, the initiative having been taken by the state through the passing of acts stipulating certain minimum requirements for the lodgings to be used by loggers. The camps must now have a definite cubic minimum of space per man, they must have wood floors, windows, etc. They must be warm and free from draft. It is also becoming more customary for the loggers to employ a cook for the preparation of their meals, to keep the camp in order, to repair their clothes, etc. Most cabins are now built for 8 to 16 men and are made so that they can be transported from one place to another.

Considering the extensive and heavy nature of logging work it may perhaps be asked why it has not become mechanized, as is the case in the United States. It should be recalled, however, that the natural conditions are very dissimilar in the American and Swedish forests. For one thing, the size of the Swedish timber is much smaller than the American. If a comparison is to be made, Eastern Canada may be taken as a fair example; there the size of the trees is about the same as the Swedish and the logging activities also resemble those in Sweden, inasmuch as the snow and the water courses are used for the log drving.

Nevertheless, lately a lively interest has developed in the mechanization of logging. For a number of years motor trucks have been used for timber transports in

southern Sweden, and they are rapidly gaining in popularity due to the extensive road net in this part of the country and the scarcity of streams available for floating. Recently, certain attempts at rationalization have been made in the construction and maintenance of logging implements, and new methods of mechanizing the felling and bucking as well as the yarding of the logs are at present being tried out.

However, the classic form of log transport, which remains as efficient as ever, is *floating*. Obviously, the superiority of this old form of transporation lies in the fact that nature provides the power. Even the channels are a gift of nature, although great sums must be expended in improving them to facilitate floating. Yet, the money spent in river improvements is insignificant when compared to the enormous amounts which would have been required for a road or railway net of similar length. Moreover, the rivers concentrate the raw material at the river outlets, which form ideal locations for major industrial enterprises as well as good harbors.

The low cost of this means of transportation becomes apparent from the official floating statistics. For instance, the cost per cubic meter of floated timber in 1935 was 1.41 kronor, or about 1 cent per cubic foot.[1] The mean distance of the timber thus floated was about 80 miles. Were it to be transported a similar distance

[1] The mean hourly wage for workers engaged in floating was according to official sources 0.93 kronor (about 25 cents).

by railroad the freight charges would have been about 4 times as high.

The biggest year in Swedish floating up to now was 1936 when more than 154 million pieces of saw-timber and pulpwood, etc. representing 538 million cubic feet, drifted down the Swedish water courses. This means that about two-thirds of all the raw material used up by the "forest industries" was transported by river. The remainder was shipped by rail and truck and—to a minor extent—by horse from forest tracts in the neighborhood of industries.

Floating predominates in northern Sweden, and the other means of transportation in the southern parts of the country. As previously mentioned, the river courses in southern Sweden are unsuited to floating while, on the other hand, railroads and highways are better developed. Of a total of 20,400 miles of floating rivers, not less than 95 percent are situated in Norrland, Dalarna, and Värmland. In the south of Sweden the processing plants are located at railroads in close proximity to large forest tracts, thereby reducing the freight charges for the raw material. The finished product, however, weighing but one-third of the raw material required for its manufacture, can be shipped by rail or truck to port or place of consumption relatively cheaply. These plants are in general smaller than the Norrland mills.

The northern river courses possess another advantage in their even and close distribution over the entire northern timber belt. This reduces the average haul by

sled to less than two miles, which means that a team may make three or four return trips per day. The importance of these short hauls is brought home more strongly when we learn that even for such a short haul the cost per cubic foot is practically the same as for the many times longer floating distance.

The Forest Industries

General Orientation. The two major industries which base their activities on the forest are—as previously mentioned—the sawmill and the pulp industries. Dependent on these are a great number of finishing industries, the most important being the paper mills, frequently forming an integral part of the corporate structures in the pulp business. The production of *rayon* and *staple fiber* is still small in Sweden, but the raw material for these synthetic fibers, a special quality bleached sulphate pulp, is processed in large quantities. Then there exists another group of industries for the purpose of utilizing the waste products resulting from the manufacture of lumber and paper pulp. This waste constitutes almost one-half of the total raw material, from which it follows that this industry has great future potentialities, although up to now it has only been within the sawmill industry that the waste products have been utilized to any major extent. Another branch of forest industries is plywood manufacture which occupies a more or less independent position.

The more important of the Swedish forest industries produced in 1937:

		Quantity	Value in millions of kronor[1]
Lumber	M.B.F.	2,730,000	299.3
Paper pulp	ton[2]	3,885,000	537.0
Paper and cardboard	,,	1,078,000	256.3
Wall-board	,,	93,000	22.4
Plywood	,,	24,000	8.7
Ethyl alcohol	gallon	7,374,000	6.9

[1] One dollar = about 4.00 kronor.
[2] Ton = 2,000 lbs (air dry weight).
[3] American gallon = 3.785 liters (95 % alcohol).

In 1936 there were in Sweden, according to official statistics, 1,516 sawmills, 94 pulp mills and 76 paper mills, employing 35,200, 18,200, and 17,300 workers respectively. In addition, there were a great number of small sawmills not included in the official statistics with an unknown production, which was undoubtedly quite considerable.

About three-fourths of the production given above of sawed lumber and pulp was turned out by mills situated in the northern coniferous region, Norrland, and the provinces of Dalarna and Värmland. The manufacture of paper, however, is concentrated to the southern parts of the country, the principal reason for this being the ice conditions in the Baltic. The ports in the middle and northern parts of the Gulf of Bothnia are closed by ice during the winter, making continuous shipment impossible for the export trade. Another reason is that the major portion of the domestic market for paper

is found in the more densely settled regions of southern Sweden.

The integration of the sawmill and the pulp industries has probably progressed farther in Sweden than in most other countries. The reason for this is found in the great advantages in the utilization of the raw material gained by the close cooperation of the various forest industries. In the case of Sweden the advantages become even more apparent due to the fact that the raw material to a considerable extent comes from forests owned by the industries. Some of the advantages are found in the economies effected from the utilization of the waste products from the sawmills as raw material for the manufacture of sulphate pulp, while the sawdust is used for fuel in the pulp mills.

In order to gain these advantages and others inherent in a mass production industry—such as reduced manufacturing costs—a continuous process of consolidating smaller industries into larger units has been going on during the past decades. At present the Norrland wood processing industry is concentrated to a few dozen large corporations which own sawmills, pulp mills, and large forest tracts, furnishing a considerable part of their raw material. These corporations have shown themselves capable of weathering the storms of depression because of their control over the sources of raw material, and the fact that lumber and pulp usually are not equally hard hit by the depression at the same time.

The final phase in the consolidations consists in unit-

ing several large corporations into larger concerns, sometimes in the form of holding companies. Outstanding among these is the *Swedish Pulp Company* which controls more than twenty large corporations with a total output of 400,000 M.B.F. of lumber, 750,000 tons of cellulose pulp, and 200,000 tons of mechanical pulp. The total forest land controlled by this company amounts to 5.5 million acres.

Among the associations formed within the forest industries may be mentioned the Swedish Wood Exporters' Association, the Swedish Cellulose Association, and the Swedish Woodpulp Association.

The Swedish forest industries are to an exceptionally high degree working for export, which becomes apparent when comparing the figures of the total production of lumber, pulp, and paper, and the 1937 export figures given below for the same products.

EXPORTS OF LUMBER, PULP AND PAPER FROM SWEDEN IN 1937

Importing Country	Lumber M. B. F.	Sulphite pulp Tons	Sulphate pulp Tons	Mechanical pulp Tons	Paper and board Tons
Great Britain and Ireland	916,607	257,738	141,794	255,941	269,860
France	102,873	153,970	46,478	70,609	22,535
Germany	163,227	33,661	73,224	303	4,644
Denmark	156,905	23,622	2,201	2,466	38,946
Norway	68,720	10,672	4,680	1,433	3,040
Netherlands	98,004	38,737	22,789	3,617	26,950
Belgium	60,410	62,001	16,476	8,179	30,405
Spain, Portugal ...	5,629	20,565	10,934	6,648	1,285
Italy	545	92,022	14,763	—	793

Other European countries	25,281	24,685	7,891	842	8,909
United States	408	535,619	520,381	28,634	120,222
Other non-European countries...	134,570	182,707	126,833	10,501	204,642
Total	1,733,179	1,435,999	988,444	389,173	732,231
Total value, in million kronor	228	246	139	31	165

[1] Tons at 2,000 lbs. air dry weight.

The Sawmill Industry. Its Products

The most characteristic feature of the sawmill industry in Sweden—as well as in other European countries—is the use of gang saws for sawing the timber. In this way it differs from the American sawmills which use mostly band saws. Both methods have their advantages and disadvantages which we will not enter into here. However, the gang saw is better suited to the small dimensions of the Swedish timber, and the band saw to cutting the large-dimension timber of the virgin forests of North America. According to the floating statistics for the past years, the average size of Swedish saw logs is about 7.4 cubic feet, which—regarding the average length as 16 feet—corresponds to a top diameter of only 8 inches (inside bark). The sawing of such small timber must be done with care if the percentage of waste is not to mount too high. The relatively high cost of the raw material at the sawmill is another reason for the strict economy which characterizes the Swedish sawmill industry.

When sawing, the main problem is to get the greatest possible net value out of the log. Knowing the values of the different sizes of boards it is possible to derive the method of sawing with a certain top diameter which will give the maximum net value. In accordance with these calculations the blades of the gang saws are set in a certain way for each top diameter of log. The timber is sorted according to top dimension in front of the mill intake, so that each gang saw may be fed the dimension to which the blades are adjusted. Usually the timber is sorted according to full and half inches; sometimes, however, the sorting is narrowed down to one-quarter of an inch. Nevertheless, despite this minute care and the fact that the thickness of the saw blade has been reduced to a minimum—the cut is now about 1/8 inch thick—it has not been possible to gain on the average more than 50 to 55 percent of boards from the logs. The remainder is waste and its utilization is of tremendous importance for the Swedish sawmill industry. As a matter of fact, it is the second largest problem confronting the industry to-day, a problem which we shall have occasion to discuss in more detail in the sequel.

The width of the boards has continually decreased, following the gradual depletion of the big timber of the virgin forests. We have already mentioned that the average top diameter of the saw logs is now but 8 inches, from which it follows that the width of the boards is generally small. More than half of the production is less than 6 inches and only 15 percent is more than 8 inches

in width. However, this reduction in the size of the lumber has not caused any difficulties for the sawmill industry, because the market for these smaller dimensions has increased, while steel and concrete have replaced the larger dimensions formerly used in construction work.

Pine and spruce are practically the only trees used for sawing. Of the hardwoods it is only the birch that is sawed, but the quantity is quite small, amounting to but 1 percent of the total production. However, the hardwoods are used for a number of other purposes, e.g. for plywood, matches, implements, etc, the raw materials of which do not require any previous sawing.

Of the two conifers the pine is by far the most important for the sawmill industry. It furnishes the raw material for two-thirds of the entire production, the reason being that the pine forms the greater part of the stock of timber suitable for sawing. Another reason is the fact that the largest portion of the logged spruce goes to the pulp industry because the pulp mills have —thus far at least—paid a better price for spruce than for pine. On the other hand, the sawmill industry has paid more for pine, as this lumber has always demanded a higher price than spruce in the lumber market. This difference in the demand for pine and spruce has caused the diameter limit between saw-timber and pulpwood to be lower for the pine than for the latter. While it is usual to saw pine with a top diameter of only 6 inches

—sometimes 5 inches when the quality is high—the same limit for spruce lies at 8 or 9 inches.

The sorting of the boards into different qualities is of great importance, as they quite naturally vary considerably in price. The most important considerations in sorting are knots, blue stain, cracks, and wany edges. Detailed grading rules exist which stipulate the maximum amount of these defects for different qualities, widths, and thicknesses of boards, when each kind of defect occurs alone. However, when several different ones exist simultaneously they must be judged in their relation to each other, which introduces a subjective element in the sorting. Moreover, the timber in different parts of the country varies also, from which it follows that one and the same grade is never directly comparable at different mills. In this way the output of the major mills receives an individual character of great importance to customers. For this reason all boards are marked at the ends, and from this mark may be read not only the grade and the species of lumber but also the mill which produced it. As a means of simplifying this branding procedure it is customary to gather the four best grades into one class called "unsorted". A fifth and sixth grade also exist.

The branding of the lumber is an efficient means of maintaining its quality. Naturally, each mill is anxious to keep its products up to a certain standard in order to remain in the good graces of its customers.

The use of gang saws gives boards with very exact

dimensions, a property much appreciated by the lumber buyers. The accurate dimensions of the lumber, the careful drying, and the care exerted when shipping have brought the Swedish sawmills a set of permanent customers with whom business relations have been maintained for decades.

About one-third of the boards are planed. This is usually done at the sawmills, the largest of them having their own planing mills. A much greater proportion of the lumber would undoubtedly be planed were it not for the fact that this lumber is subjected to considerable custom duties in many of the import countries.

Planing may be considered as the first stage in the finishing process of the boards. Another phase is the manufacture of box lumber, planed and unplaned, which generally occurs at the sawmills. In southern Sweden the sawmills are combined with joineries working for the domestic market as well as for export. Some of their most important export products are doors and window frames. At certain mills this production has been enlarged to include pre-fabricated houses in standard models which are assembled on the customer's premises. This manufacture has reached a considerable volume through the substantial savings obtained by the factory production of houses.

It was pointed out above that the development of new methods of utilizing the waste of the mills is the second big problem of the sawmill industry. What, then, has been done in Sweden towards solving this problem?

First should perhaps be mentioned the production of small-dimension boards, box lumber, staves, etc. from the sawmill waste. This manufacture, however, does not come up to more than about 3 to 4 percent of the raw material. After utilizing this surplus of sawed products to the utmost limit of present technical resources there still remains just about as great a waste problem as before.

From the very beginning it has seemed logical to use the waste for the running of the mills. But even in former times with their inefficient steam plants there still remained a great deal of waste unused. Later, this surplus was made into charcoal at sawmills which were able to market this product. However this utilization of the waste has become considerably reduced nowadays not only because of the lessened demand for charcoal, but chiefly because of the new uses that have been discovered for the waste as raw material for the sulphate pulp industry. From an economical point of view this solution of the waste problem is the most satisfactory which has thus far developed. As a matter of fact, it has reached such an economic importance that it is practically impossible with present timber prices to run a sawmill on purchased timber without the opportunity of utilizing the mill waste in this manner. About one-fourth of the large production of sulphate pulp derives its raw material from the sawmills. But a prerequisite for utilizing the waste in this manner is that the timber be barked. Formerly, this was done in the woods, but

recently the larger mills have begun to bark the timber in large drums in order to reduce the considerable costs involved in barking the logs by hand.

A new consumer for the waste has appeared in recent years. This is the wallboard industry, which can utilize to advantage not only the sawmill waste but also round timber of a quality too poor to be used by the pulp industry. In the manufacture of wallboard the question of good raw material is not so important because the color of the product is brownish and no structural demands are put on it.

This latter branch of the Swedish forest industries is not more than a few years old. Less than ten years ago the first factory in Europe was established in Sweden for the manufacture of wallboard according to the American masonite method. Later, other plants have been erected employing other methods which are more closely related to the manufacture of wood pulp. In 1937 Sweden manufactured 93,000 tons of this product, of which 26,000 tons were for export, making the country the largest producer in Europe. The future of this flourishing industry looks bright, and with the increased use of wallboard in building it is to be expected that its rapid expansion will continue.

The Pulp and Paper Industries. Their Products.

In Sweden the pulp industry has reached a more advanced development than in most other wood produc-

ing countries. This is true not only of the volume of production but also relatively, i.e. in relation to the other forest industries, principally the sawmill industry. In their consumption of raw material, amounting to 560 million cu.ft. of pulp wood in 1937, the Swedish pulp mills have definitely outdistanced the sawmills as the foremost consumers of the timber in the Swedish forests. The total manufacture of paper pulp was 3,885,000 tons in that year, a figure exceeded only by the United States and Canada. The reasons are many for this remarkable development of the Swedish pulp industry, the foremost being the favorable location of the forests for exploitation and export. To this may be added the excellence for pulp manufacture of the two conifers—spruce and pine—which form the bulk of the Swedish forests. For the mechanical pulp industry the wealth of easily convertible water power has been of decisive importance. Finally, the growth of the Swedish conifers is slow and the sources of the large virgin timber having been depleted, a relatively large proportion of the forest yield consists of the small sizes best suited as raw material for the pulp industry. The considerable thinnings of the forests in the interest of silviculture also favor the pulp industry. As a matter of fact, it is chiefly thanks to this industry that it has become economically possible to carry on such extensive "cleanings".

Of the 1937 production of pulp given above, 809,000 tons constituted mechanical pulp, while the remainder,

or 3,076,000 tons, was chemical pulp. As a producer of mechanical pulp Sweden occupies the fourth place in the world market after Canada, the United States, and Germany. Sweden is, however, the largest exporter of such pulp, having surpassed Norway in recent years. In 1937 the export amounted to 389,000 tons, or 31 percent of the total export volume of the world.

In respect to chemical pulp, Sweden has an even better position. It runs second to the U.S.A. as a producer, and in 1937 its share of the total world production was 20 percent. But as an *exporter* of chemical pulp Sweden is first, and the amount exported in 1937 was 2,424,000 tons, or not less than 42 percent of the total export volume of the world.

The raw material of the mechanical pulp is spruce. This and certain closely related species of trees (Tsuga, Abies) give when ground up a white pulp which can be used without previous bleaching for certain less exacting paper qualities, such as newsprint, etc. However, the mechanical pulp used alone is not sufficiently strong for this purpose. In grinding, the fibers become damaged and shortened and therefore less suited for a strong paper. Moreover, some of the other constituent parts of the wood, the non-fibrous lignin and other so-called incrustants, are left in the mechanical pulp, tending to reduce the strength of the paper made from it. In order to increase the strength of the newsprint it is necessary to add 15 to 20 percent of the stronger sulphite pulp.— Another major field for the use of mechanical pulp is the

manufacture of cardboard and wrapping paper, where it is combined with other pulps. These paper products, especially newsprint, are made and exported in large quantities from Sweden.

The processing of mechanical pulp is to a great extent concentrated to Norrland due to the prevalence of cheap water power, and the possibility of assembling huge volumes of raw material at the river mouths. This has aided the development of large plants with capacities of from 50,000 to 100,000 tons of pulp annually. An even greater expansion of the manufacture of this kind of pulp would have been possible were it not for the fact that still greater markets have opened up for chemical pulp. It is in this field the really great expansion has occurred.

The manufacture of chemical pulp is in Sweden based entirely on the conifers, spruce and pine, the hardwoods never having been utilized for this purpose, due to the shortness of their fibers, making them less suited for paper manufacture because of the inadequate strength of the paper. When stronger paper is not demanded it is more economical to use the cheaper mechanical pulp. In the U.S.A., however, certain hardwoods have come to be used in the manufacture of chemical pulp—the so-called soda pulp—the most important being the aspen because of its whiteness. But the supply of aspen is quite limited in Sweden and not even sufficient to meet the demands of the match industry.

The process of making chemical pulp, or cellulose as

it is also called, consists of freeing the cellulose fibers from the lignin and other incrustants which not only reduce the strength of the paper but also its lasting quality. The fibers are freed by breaking up the wood into small pieces about one inch long, which are then cooked in a solution under varying pressures. Different varieties of wood demand different solutions depending primarily on the resin content of the wood. Trees with a low resin content, viz. spruce and related varieties (Abies, Tsuga, etc.), are dissolved in a solution of *calcium bisulphite,* from which the pulp has derived its name, *sulphite pulp.* Other varieties of trees having a higher resin content, such as pine, must be dissolved in a strong alkaline solution capable of also dissolving the resin. This kind of pulp is named *sulphate pulp.*

However, it is not merely the manufacturing process which makes these two pulps vary from each other. As a matter of fact, their properties also differ considerably, causing them to be used for different purposes. The most apparent difference is the color, the sulphite pulp being white and the sulphate pulp brown. Obviously, this means that the former is chiefly used wherever whiteness is of importance, primarily for printing and writing paper. On the other hand, the sulphate pulp is used wherever whiteness is not exacted, but where strength is demanded. It is therefore used principally for wrapping paper, cardboard containers, bags, etc. Whiteness and strength thus being the two chief requisites, the pulp mills have for years directed their

efforts towards improving the pulp along these lines.

The Swedish pulp industry has not only done considerable pioneer work in the manufacture of cellulose, it has also carried out important research in improving the quality of the pulp. We have already had occasion to mention how in 1872 *C. D. Ekman,* a Swedish engineer, succeeded in producing a white pulp by the sulphite process. Three years later the *Munksjö Pulp and Paper Mills* developed a wrapping paper which was much stronger than any paper on the market at that time. Produced by a special cooking process of sulphate pulp, the new paper was introduced in the international market as "kraftpapper" and was an immediate success. Ever since that time "kraft paper" and "kraft pulp" have been the terms used for this paper product and the equivalent quality of the sulphate pulp. Sweden is still a leading manufacturer of kraft paper, in quality as well as quantity, and as an exporter still retains a place far ahead of the rest of the world.

The whiteness of the pulp is improved by bleaching. This is a relatively expensive process and is therefore used only when whiteness is imperative, such as for book and writing paper.. The sulphite pulp used in newsprint is unbleached. Naturally, this is also the case with the large volume of sulphite pulp used for wrapping paper—with or without the admixture of mechanical pulp.

Sweden's total production of sulphite pulp in 1937 amounted to 1,803,000 tons. Of this 514,000 tons were

bleached and the remainder, 1,289,000 tons, unbleached. The export was 433,000 tons of bleached pulp and 1,002,000 tons of unbleached, i.e. in this field also, Sweden led in export.

For many purposes it may be desirable to combine whiteness and strength in the same paper pulp. This has been accomplished by raising the strength of the bleached sulphite and by bleaching the sulphate pulp. The latter met with great difficulties until the pulp was subjected to bleaching in several stages, whereby it became possible to obtain a sulphate pulp of the same whiteness as the bleached sulphite pulp but having a considerably greater strength. This new quality of sulphate pulp has come to replace the expensive cotton and linen rags used in the finest paper qualities to give strength to the paper. In addition, it has found a wide market in connection with the increasing use of white wrapping paper in the retailing of food where it is desired to combine paper strength with a pleasing appearance. But many and varied uses lie in wait for this recently developed pulp which combines the two most important properties of any paper pulp.

Bleached sulphate pulp was first made in the U.S.A. about 1930, and some time later its manufacture was begun in Sweden. The Swedish export started in 1932 and by 1937 Sweden led the rest of the world with an export of 96,000 tons of this new quality sulphate pulp. In other words, whether it be mechanical pulp, bleached or unbleached sulphite pulp, or bleached or unbleached

sulphate pulp, Sweden occupies first place as an exporter of these forest products.

In this discussion great stress has been laid on the strength and whiteness of the pulp. But it has also been mentioned in passing that different fields of application require different degrees of these properties. However, raising these above a certain "reasonable" level adds an extra cost to the pulp. It is therefore in the interest of the pulp buyer to be able to get exactly the kind of pulp he needs—neither better nor worse. However, the term "strength" being a collective term complicates the matter, because it covers a great number of related properties, e.g. tearing strength, bursting strength, folding strength, each one being of a different importance depending on the final purpose. Moreover, the pulp has other properties, hitherto unmentioned, of which perhaps the most important is *purity*. Most of these can be modified by changes in the manufacturing process, chiefly by altering the composition of the cooking liquor, cooking time, temperature and pressure. By knowing how these various factors react on the pulp it is possible to determine beforehand a certain combination of desirable properties.

Naturally, pulpmen in Sweden and in other pulp producing countries have devoted much effort and gone to great expense to develop these manufacturing processes. The last phase of this development is the continuous control method of manufacture, i.e. tests are taken during the cooking in order to determine the

properties of the pulp at intervals and to stop the cooking process at the proper time. However, for such tests the pulp must have a uniform consistency, i.e. the cooking must proceed at the same rate in every part of the digester. In the production of sulphate pulp this is accomplished by means of forced circulation of the cooking liquor, but this method met with difficulties when applied to sulphite pulp inasmuch as the hot acid bisulphate solution used as cooking liquor rapidly destroyed the pumps and pipes. It is only in recent years that this important improvement has been introduced in the sulphite industry due to the discovery of stainless steel, which has resulted in the production of a more uniform pulp than was formerly possible.

The more exacting the purposes for which the pulp is intended, the more important becomes the manufacture of a uniform pulp with definitely fixed properties. This is especially the case with pulp intended for the relatively recently developed products, *rayon* and the closely related *staple fiber*. The raw material for these products consists to about 90 percent of bleached sulphite pulp of the highest quality. By "highest quality" is meant in this case that the pulp not only must possess an exceptional degree of purity, etc. but it is also essential that each part of the order meet certain minute specifications. Any changes in the quality of the rayon pulp must be done in close cooperation with the rayon manufacturer, and must be preceded by extensive research. Attempts of the pulp manufacturer to improve

the quality of the pulp without the knowledge of the rayon mill would be ruinous to the intricate process of rayon production.

The large volume of pulp intended for rayon and staple fiber produced by the Swedish mills is evidence of the high quality product turned out by this country. Of the 1937 production of bleached sulphite pulp, amounting to 514,000 tons, not less than about 175,000 tons were rayon pulp, practically all of which was exported. As a comparison it may be mentioned that the total world consumption of bleached sulphite pulp for rayon and staple fiber in that year is estimated at approximately 1,135,000 tons—which indicates the extent of the rapidly expanding market for this new use of paper pulp.

One more thing should be added in respect to the quality of the pulp. Assuming that the manufacturing processes will some day reach such a degree of perfection that it will be possible to exert an exact control over the manufacture, there still remains another factor to be taken into consideration. This is the raw material. It varies, and varies greatly. This complicates the problem, especially as regards the manufacture of such uniform pulp as that demanded for rayon and staple fiber. Strict care must be maintained in respect to the condition of the raw material. It is not enough to eliminate wood possessing knots, bark, and similar faults tending to reduce the quality of the raw material; the annual rings of the wood should if possible be even. In this

respect, too, the Swedish pulp industry has an advantage inasmuch as the slowly growing wood of the Swedish forests has more even annual rings than wood from more favorably located forests.

The influence of the raw material on the properties of the pulp is now the subject of intensive research in Sweden as well as in other pulp producing countries. It has been found that the properties of the wood in one and the same kind of tree vary, not only according to climate, soil conditions, etc. but even in different parts of the same tree. The methods of thinning also influence the properties of the wood, and especially the cubic unit yield of the raw material. It is expected that this factor will soon play a certain role in the thinnings of the stands.

Naturally, the pulp varies most when different woods are used. As an example may be taken the difference in quality between the sulphate pulp manufactured from Swedish pine and that from the southern yellow pine growing in the U.S.A. The wealth of yellow pine in the southern states gave rise to a sulphate industry in the South immediately after the war, which has expanded rapidly since then, surpassing even the Swedish sulphate industry. It would have been natural to expect the U.S. to meet its demand for sulphate pulp from this domestic source and stop its Swedish import, or at least materially reduce its volume. Such has not been the case, the reason being that the southern pine gives a different quality of sulphate pulp. From this a stiff

pulp is obtained, ideal for the production of container board, while the Swedish gives an unexcelled material for the manufacture of wrapping paper and paper bags. In this case it is a matter of two different kinds of pulp which compete with each other only in certain overlapping fields of application.

This brief description is merely intended to point out some of the problems which the Swedish pulp industry has had to solve and is still attempting to solve in order to give its customers a product well suited to their diverse requirements. But thus far nothing has been said about the successful efforts in reducing the manufacturing costs of the pulp. Some of the work along this line has been in *salvaging the by-products of the waste liquors.*

About one-half of the original volume of raw material remains in the liquor in the form of dissolved lignin and other incrustants. Hitherto, practically all of this has been allowed to go to waste, which means that enormous quantities of organic matter are lost annually. Swedish pulpmen have for many years been considering means for the utilization of this tremendous potential asset. But the difficulties are great and up to now their attempts have been only partially successful, *ethyl alcohol* being the chief by-product derived from the waste liquors of the sulphite industry.

The production of ethyl alcohol is based on the presence of sugar in the waste liquors. This sugar develops during the cooking process by the dissolution of certain

organic elements into this less complex one. By adding yeast and other substances it is possible to further break up the sugar, whereby alcohol is obtained, which is then separated and refined by suitable processes—all quite simple. The deciding factor, however, in this case as in so many others dealing with the salvaging of by-products is: Does it pay?

The answer to this question lies in the use of the alcohol. Mixed with gasoline the major portion of it is used as motor fuel. A mixture of one part alcohol and three parts gasoline produces an even better fuel than pure gasoline. Considering the large Swedish consumption of motor fuel it would not be difficult to find a market for the entire theoretical production of ethyl alcohol. But this is where the question of cost enters into the picture. The manufacturing cost of ethyl alcohol is considerably higher than the import price of gasoline. However, this difference is somewhat compensated by the gasoline tax and as the alcohol is not subjected to a similar tax it has been possible to maintain an alcohol production at a limited number of sulphite mills best suited for its manufacture. In 1937, 7,374,000 gallons of 95 percent alcohol were turned out by these mills, out of a theoretical total for the entire country of about 20 million gallons. But even the latter volume is but small in comparison with the Swedish import of gasoline.

However, even if the entire theoretical volume of alcohol could be utilized, only about 15 percent of the organic

substances dissolved in the waste liquors of the sulphite industry would be salvaged. In the sulphate industry it has hitherto been possible to economically utilize only some smaller quantities of resin and terpentine, which shows that the situation is still far from satisfactory. In other words, here exists a wide field for research, and one which promises rich returns.

In 1937 the domestic consumption of wood pulp was 1,072,000 tons, which represents the volume used by the Swedish paper industry. The manufacture of paper and cardboard was in that year 1,078,000 tons, distributed according to the following table:

SWEDISH PRODUCTION OF PAPER AND CARDBOARD 1937

Tons = 2,000 lbs.

Newsprint	312,200
Wrapping paper	429,400
Book and writing paper	86,500
Greaseproof paper	30,200
Other kinds of paper	71,700
Total paper	930,000
Cardboard	148,400
Total paper and cardboard	1,078,400

It is apparent from the above that newsprint and wrapping paper top the Swedish paper production, representing two-thirds of the total output. The reason for the predominance of these paper qualities may be found primarily in certain natural conditions favoring their production, such as the prevalence of Swedish kraft pulp for wrapping paper and the cheap water power for the manufacture of newsprint. Another im-

portant factor is the relative ease with which these kinds of paper may be sold, because of the usually low custom duties in the various import countries. Other paper qualities are harder hit in this respect. Another reason is that when placing small and complex orders for paper the buyers prefer to deal with a neighbouring manufacturer in order to have them filled with the least possible loss of time. This favors the domestic industry of the consumption country, which thereby gains an advantage over the foreign paper industry, even though the domestic manufacture is often based on imported pulp. However, when dealing with standardized paper qualities, e.g. newsprint, and wrapping paper, this close contact between producer and customer is no longer necessary.

The import tariffs on paper and cardboard are also the main reason for the export production of container board not having reached any great volume in Sweden, although the Swedish kraft pulp is well suited to this manufacture after a special modification of the cooking process. Instead, a container board industry has grown up on the European continent in recent years, based chiefly on kraft pulp imported from Sweden. But this industry is still small in comparison with the enormous container business which has developed in the United States. Nevertheless, the use of container board is rapidly expanding in Europe, too, because of its extraordinary cheapness and reliability as packing material for even the most perishable merchandise, such as wines and

certain foods. It is important, however, to know how the containers should be constructed and the kind of container board best fit for each purpose. For supplying information on the use and manufacture of containers the Swedish Pulp Company has a special service department, the Container Laboratory, situated in Paris.

Rayon and staple fiber are in Sweden manufactured at only two mills, and the production of rayon does not cover the home demand. Staple fiber, on the other hand, has begun to be exported, although as yet only in small quantities. The same is the case with certain transparent materials manufactured similarly to staple fiber, such as alophan, diophan, and others.

This, however, by no means exhausts the list of the number of products manufactured from paper pulp. Almost every day it enters into new fields of application because of the ease with which it lends itself to the manufacture of different products, whether it be by chemical or mechanical means. But to enter into a description of these multifarious products would lead us too far afield.

The National Forest Survey

A question of major importance in Swedish economy is whether the Swedish forests are capable of supplying in the long run the tremendous volume of raw material consumed by the forest industries each year. Is the annual growth of the forests equivalent to or better

than the amount of timber cut each year? In olden days the fear of depleting the forests led to a restrictive legislation, the cut—or more correctly the establishment of wood-consuming industries, blast furnaces, sawmills, etc.—being carefully regulated. Nowadays, however, the problem is attacked from a more rational point of view. While the legislation is restricted to combating the worst aspects of forest waste, the main efforts are directed towards encouraging and aiding the good care of the forests. Naturally, it is of the utmost importance when shaping the public forest policy to have detailed information on the forests and their actual capacity in relation to the amount of timber cut. By the National Forest Survey undertaken in Sweden during the years 1923—1929 such detailed information on the forest resources was obtained. This survey was carried out on the basis of a similar study made in the province of Värmland in 1918, the first of its kind ever made in any country. The forest is surveyed by running parallel survey lines a certain distance apart and then measuring every tree at breast height within about 16 feet on each side of the lines. The lateral distance between the lines differs in various parts of the country; in Skåne it was six-tenths of a mile distant, while in Norrland it was 12.4 miles.

An enormous fund of valuable information has been acquired from this survey regarding the condition of the forests, their growth, their distribution into different age classes, dimensions, etc. Just a few will be

mentioned here in order to give an idea of the nature of the information thus gained.

FOREST AREA, GROWING STOCK AND ANNUAL GROWTH ACCORDING TO THE NATIONAL FOREST SURVEY OF 1923—1929[1]

Unit		Norrland and Dalarna	Southern and Middle Sweden	Total
Area:				
Total land area	1,000 acres	67,337	34,114	101,451
Productive forest area ...	„ „	38,571	18,711	57,283
Growing stock:				
Total	Mill. cu. ft.	31,999	18,061	50,060
Thereof pine	„ „ „	12,873	7,371	20,244
„ spruce	„ „ „	12,865	7,138	21,043
„ hardwood	„ „ „	5,261	3,512	8,773
Growing stock per acre of productive forest area ...	cu. ft.	802	935	845
Annual growth:				
Total	Mill. cu. ft.	902	781	1,683
Thereof pine	„ „ „	357	284	641
„ spruce	„ „ „	375	325	700
„ hardwood	„ „ „	170	172	342
Annual growth per acre of productive forest area...	cu. ft.	22.6	40.3	28.4

[1] Including all trees of pine and spruce reaching breast height and all hardwood trees at least 5 centimeters (1.0 inches) at breast height. (Dry trees not included.)

Of possibly greater interest is the comparison between the annual growth and the cut. Such a comparison is given in the table below which relates to the estimated average cut for the years 1929—1930.

COMPARISON BETWEEN ANNUAL GROWTH AND ANNUAL CUT FOR THE YEARS 1929—1930

(Million Cubic Feet—Inside Bark).

	Pine	Spruce	Hardwoods	Total
Annual cut:				
Household purposes[1]	96	96	178	370
Saw-timber	278	156	—	434
Pulpwood	102	324	—	426
Charcoal	25	25	13	63
Other uses[2]	57	21	23	101
Logging waste, losses while floating, etc.[3]	56	62	21	139
Total cut	614	684	235	1,533
Annual growth (National Survey)	641	700	342	1,683

[1] Primarily fuel wood but also some timber used in repairing rural homes, wood for fences, etc.

[2] Plywood, matchwood, furniture, fuel for industrial plants, small steamers, etc.

[3] Estimate only.

However, the above comparison is but approximate, due partly to the fact that the different items under the annual cut are difficult to determine and partly to the difference in the annual cuts. This is particularly the case with saw-timber and pulpwood. It is estimated that the cut of pulpwood is considerably greater than the amounts given above, while the cut of saw-timber has been reduced. It is quite probable, too, that the total cut in 1937, which was a boom year in the forest industries, was higher than that during the years 1929—1930. It should be recalled that other losses also occur besides those given, such as those due to natural thin-

ning, windfall, insect damage, etc. Taking all losses into consideration it is questionable whether there existed any net surplus of annual growth over the cut during the years 1929—1930.

In the final analysis, consideration must also be given to the fact that the annual growth changes because of climatic conditions and the displacements in the stock, particularly in its distribution according to age classes. The cut of older age classes in virgin forests now going on, and their replacement by younger age classes should in the long run tend to increase the annual growth. A similar effect can be expected because of the increased interest in silviculture. It is quite probable, then, that in the long view the annual growth tends towards an increase both in volume and in the value of the timber.

To draw any definite conclusions in respect to the changes in the forest resources and specially as to whether they are cut above their sustained yield is therefore impossible on the basis merely of such a comparison between annual growth and cut.

Besides the fact that the National Forest Survey has provided an excellent guide to the forest industries in planning their investments in plant, it has also proven itself to be a most efficient means of promoting interest in forestry throughout the nation.

A new National Forest Survey was therefore started in 1938, and it is intended that future surveys will make it possible to follow the continuous changes in the forests.

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SWEDISH STEEL

THROUGHOUT THE CENTURIES

by

Magnus Tigerschiöld

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Swedish Steel throughout the Centuries

BY MAGNUS TIGERSCHIÖLD

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According to Greek sources, the art of iron and steel making was discovered about 1,500 B. C. by an ancient people in Asia Minor. But it required almost 1,000 years for this knowledge to reach northern Europe. The earliest iron objects found in Sweden date from about 550 B. C., but no iron was produced within the country until approximately 400 years later.

The natural conditions for producing a high grade steel were then as now excellent, and the art of steel making developed quickly in Sweden. The sagas tell of the keenness of the Viking swords, and one thing is certain —the good weapons contributed much to the illustrious feats of arms in those days. It has also been claimed that the Swedish victories in the Thirty Years' War were to a high degree due to the excellent steel in the Swedish

A Viking sword from the 9th century found in Sweden.

firearms. Swedish steel found its first use in weapons and tools. During its more than 2,000 year old history it has maintained and further consolidated its ranking position in these fields, and even today, in the era of large scale industries and fierce competition, Swedish iron and steel are still the purest and best in the world. The large Swedish deposits of pure and rich ore, the extensive, well kept forest, the superabundance of water power and, last but not least, the inherited skill of generations of steel workers, and the capability of the engineers have been, and still are, the main pillars in the structure which the Swedish steel industry has erected during the past centuries.

It would be tempting to give a more detailed account of Swedish mining from olden days, but the limited scope of this booklet precludes any such attempt, and merely a brief outline of its long and varied history will be given. In ancient times the raw material for the small scale iron making was the lake and bog ore, which was reduced in small and low primitive furnaces. The steel produced in this manner was never completely smelted. It was removed from the oven as a lump containing a mixture of iron and slag. Generally, it possessed such a low carbon content that it could be forged, and to reduce the slag content of the steel it had to be re-forged in a hearth. In other words, the early steel making was a direct method, and the present indirect process by way of blast furnaces producing unmalleable pig iron is a later invention. The first iron manufacture was carried on as home craft on a small scale, and as the bog ore was found principially in the province of Småland the oldest Swedish iron industry became centered in these districts. It is a debatable question when the rock ores came into use in Sweden, and thus a real mining started. Previously, it was thought that this occurred towards the end of the 12th century, but some scientists claim that rock ore was used as early as in the 7th century. The product obtained from the ancient furnaces was called Osmund and was known as the best wrought iron produced in the world.

Neither has it been possible to determine exactly the time of the construction of the first blast furnaces in Sweden. It is known, however, from numerous old documents and mining charters, that a considerable industry flourished in Bergslagen in the middle of the 14th century.[1] In one of her revelations St. Bridget gives

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[1] Bergslagen is the name of the iron ore region stretching through the central part of Sweden north of the great lakes.

a description of the blast furnace process. According to other sources, however, pig iron was produced in the country at a considerably earlier date. Nevertheless, large blast furnaces were not built until the 16th century, and this marks the beginning of the industrial production of iron in Sweden. Few inventions have been of such revolutionary importance as the blast furnace. This simple but ingenious principle has received a universal application, and it is still unsurpassed for the production of iron. Although the modern furnace has a capacity many hundred times greater than the early ones, the process is in principle the same as it was more than 500 years ago. Nevertheless, long after the blast furnace had been invented, giving rise to a real iron industry, the ancient direct method continued in use in Sweden as a handicraft production of steel.

The production of both malleable iron and steel from pig iron was formerly done exclusively by refining the pig iron through remelting in a hearth with

The Nordmark mines

A Walloon-hearth in the Dannemora district, still in

charcoal. A number of varieties of this process have been developed throughout the centuries. The most effective methods for the production of wrought iron, the Walloon and Lancashire processes, are still used in Sweden, although on a small scale.

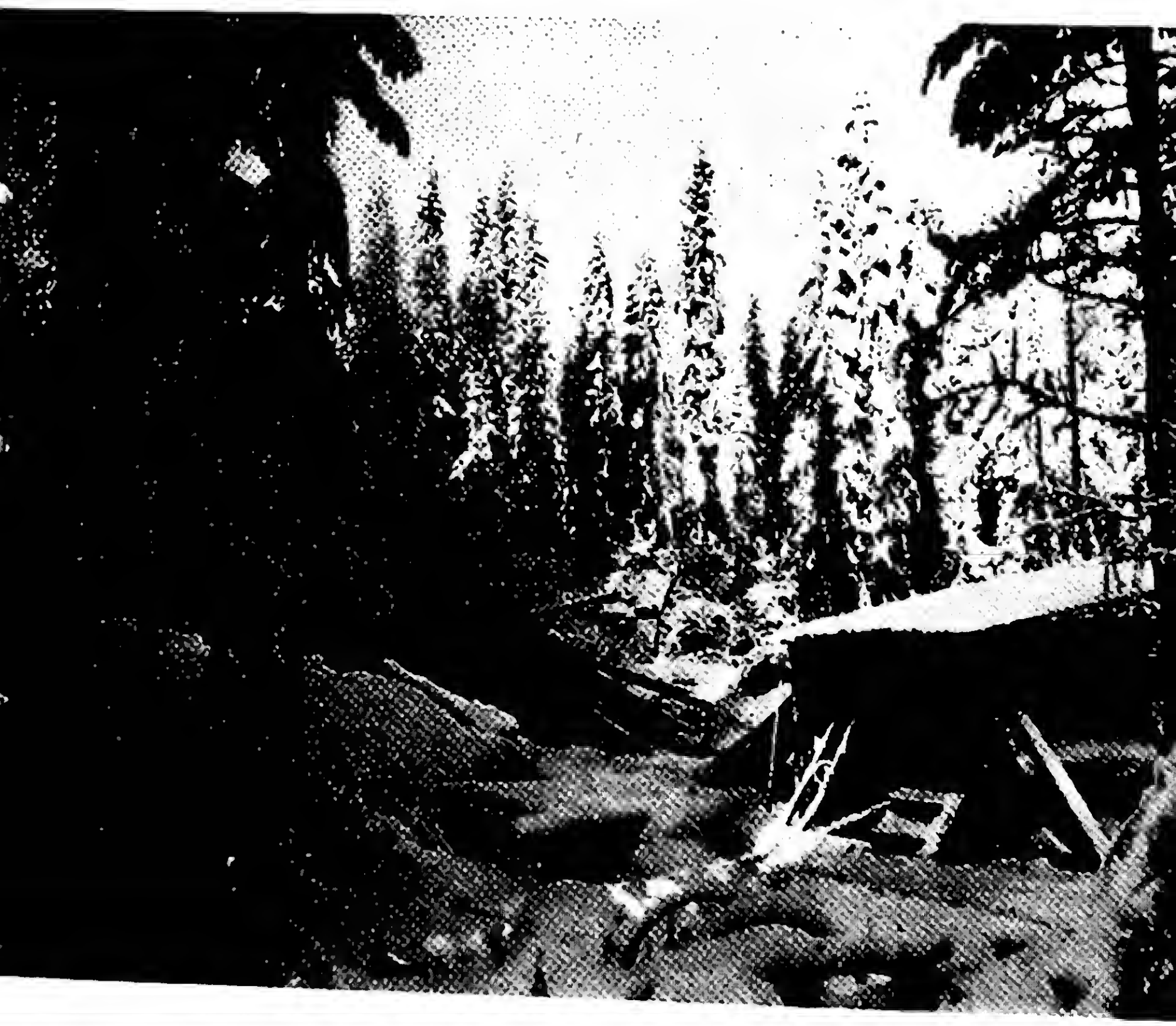
When relating the story of Swedish steel the contributions of the Swedish kings to the promotion of this important industry must not be overlooked. When in the 16th century the manufacturers began to export Osmund iron on a large scale, the king Gustaf Vasa forced them by legislation to hammer their own bar iron. His grandson, Gustavus Adolphus, banned the export of pig iron, and furthered by far-sighted measures the development of the Swedish iron industry.

With the old direct smelting method it was mostly due to chance whether the output was steel or soft iron. However, with the introduction of the blast furnace it soon became apparent that the pig iron obtained from certain ores was more easily refined to steel. In later years it has been established that the reason for this was the higher manganese content of the so-called steel ores.

At a rather early stage the method of cementation had been discovered, whereby the surface of malleable iron could be converted into steel, and the art of cold hammering iron into a greater hardness was also known. The cementation method has been further developed in our days, and casehardening is an important and commonly used process for increasing the surface hardness of iron. The steel produced from pig iron by the wrought iron processes varied widely in carbon content, and for this reason in the 17th century blister steel came to be produced. The manufacturing process for this steel was largely the same as that still used, for instance in Sheffield. Wrought iron bars are packed with charcoal in fire brick chambers and exposed to a long heating. Even this steel was lacking in uniformity, but by piling, i. e. by forging together bundles of bars and re-forging, it could be made more homogeneous.

Not until Benjamin Huntsman, an English steelman, invented the method of smelting steel in crucibles, was it possible to obtain a really homogeneous steel. The first plant for the manufacture of crucible steel was established in Sheffield in 1740, although the principle had been known in India long before then, and used as the basis for a homecrafted production. The invention of the crucible process was of outstanding importance. It opened up a new chapter in the history of steel, and was the predecessor of the modern steel processes. It

was of great significance also for Sweden, not so much for the native production of crucible steel, but primarily because the pure Swedish iron proved to be a superior raw material for the manufacture of an excellent quality crucible steel. Towards the end of the 17th century steelmen in England and on the Continent had been forced to change from charcoal to mineral coal as fuel and reducing agent, for pig iron production as well as for refining, which gave a high sulphur content in the steel. Moreover, no method had at that time been discovered for freeing the domestic ores from their impurities. As a result, Swedish iron and steel—produced from pure ores and with charcoal free from sulphur—became a raw material much in demand, among other things for the production of high grade steels by remelting in crucibles. The 18th century has been called the

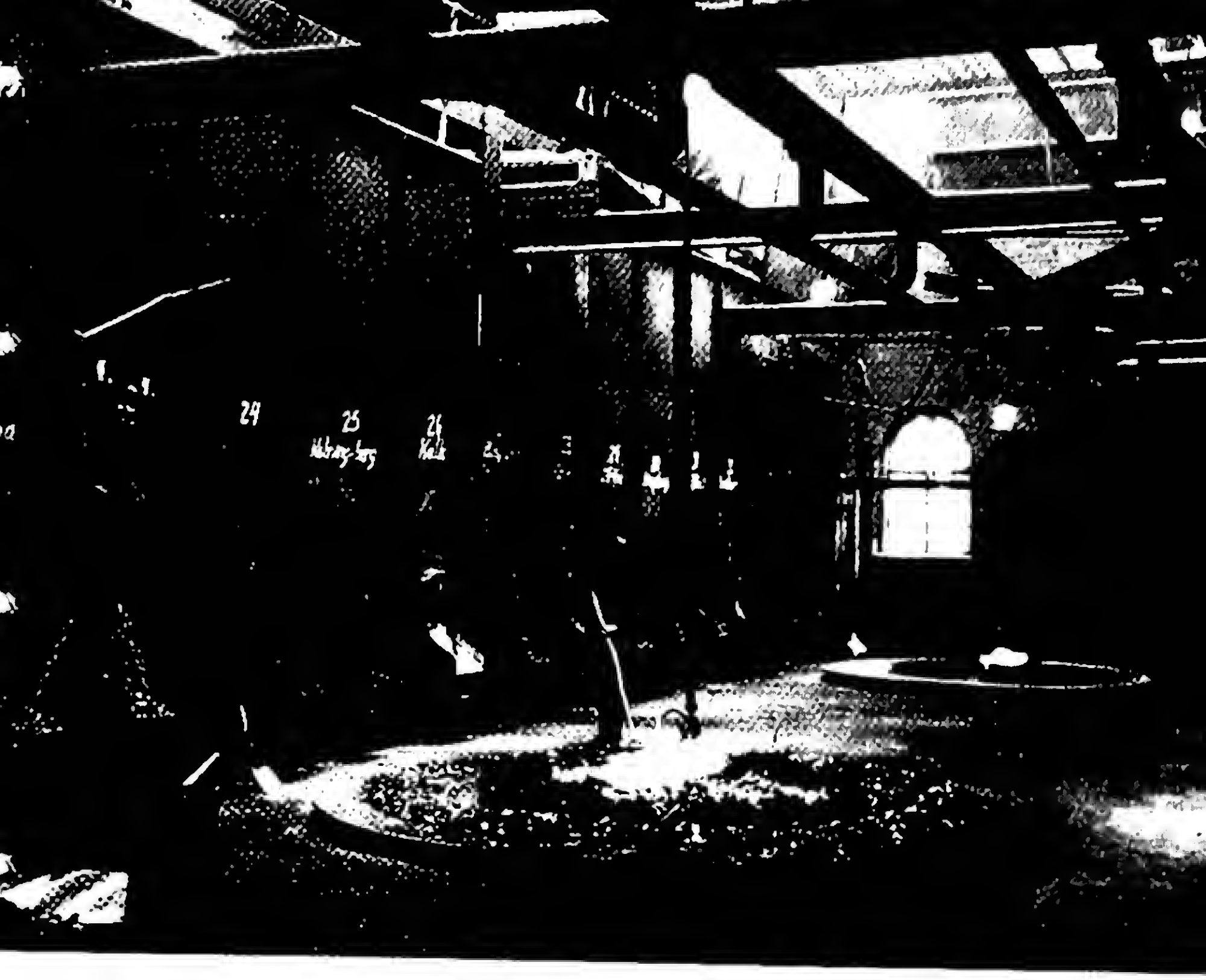


A charcoal-heap in the forests of Swe
The method is still used almost

Golden Age of the Swedish steel industry, because Sweden was then the world's largest producer of iron. However, the volume of the output was much lower than in our days.

The Swedish export of iron began to drop in the early part of the 19th century, due to the invention in England of the so-called puddling process, which permitted mineral coal to be used as a fuel. But the Swedish hegemony in the steel industry was not definitely broken until the middle of the century, when the Bessemer and Open Hearth methods were invented. These methods permitted a steel production on a much larger scale than was formerly possible, and it may be said that these remarkable discoveries paved the way for the real »steel age». Since the introduction of these methods the world production of iron and steel has been multiplied several times over, because they made possible the use of iron for struc-

Tapping the pig iron from an old-fashioned Swedish blast-furnace.



On top of the blast-furnace the different l
of ore are carefully weighed before char

tural purposes to a much larger extent than previously. In Sweden, too, variations of these processes were applied to the native steel production at an early stage. Due to the energetic and ingenious work of G. F. Göransson, a Swedish steelman, a high grade steel was developed by means of the Bessemer process, and the acid Open Hearth process was further developed to a method which gave a product of extraordinary high quality. Again the favorable conditions existing in Sweden for producing a pure and good steel gave the country an advantage which Swedish steelmen have not been slow in turning to good account.

Naturally, the revolution created by the modern steel processes have caused significant changes in the Swedish steel industry. The past fifty years are primarily characterized by the continuous concentration of the industry to a smaller number of units with favorable conditions for large scale production. In former days small plants were located at practically every waterfall in those parts of the country where the existence of ore and forests favored the production of iron. However, the establishment of Open Hearth and Bessemer plants presupposes a much larger output than that of the wrought iron processes, which could be carried on profitably even in small units. The competition became stiffer and the small iron works, frequently based on minor ore deposits, were unable to make their iron sufficiently cheap. Formerly, the location of the steel mills was also dependent on the available source of water power. All machines were driven directly, either by water wheels or turbines. By changing over to electric energy, and by the possibility of long distance electric transmission the conditions have become quite different for the establishment of efficient basing points, in respect to cheap freight costs and other geographic considerations.

The first electric steel was made in Sweden in 1900. At that time the melting was done in an induction furnace, designed by the Swedish engineer F. A. Kjellin. From the very first a high grade steel was obtained by this method. The arc furnaces of Heroult and Stassano had been designed previously, but had not been applied to steel making. It was only to be expected that electric melting was to become of major importance for the Swedish steel industry since the natural conditions for this method are ideal in the country.

In recent years the price of charcoal has risen steeply

A modern high frequency electric furnace.

due to the competition of the pulp industry for the wood utilized for production of charcoal. For this reason much work has been devoted to improving the blast furnace process, with a view to reducing the charcoal required in the smelting. These efforts have met with great success and the charcoal consumption of the blast furnaces is now only half of what it used to be fifty years ago. Electric smelting of pig iron is also done on a large scale, with resultant savings in coal for fuel, restricting its use to the role of reducing agent.

The Swedish steel plants are now almost entirely located in central Sweden, where an abundance of rich and

pure ores still form the raw material for the production of high grade steels. Nowadays only the largest deposits are worked, and, when necessary, the ore is concentrated to a rich product which generally goes to the blast furnaces in sintered form.

The large iron deposits at Gällivare and Kiirunavaara, in northern Sweden, began to be worked in the seventies. The high phosphor content of these ores makes them unsuitable for the production of high grade steels and, as coal is almost completely lacking in Sweden, they have not come to be used for a domestic production of iron. Exported to Great Britain and the Continent in volumes exceeding 10 million tons a year, the Lapland ore has come to play an important role in the raw material supply of the steel industry of these countries.

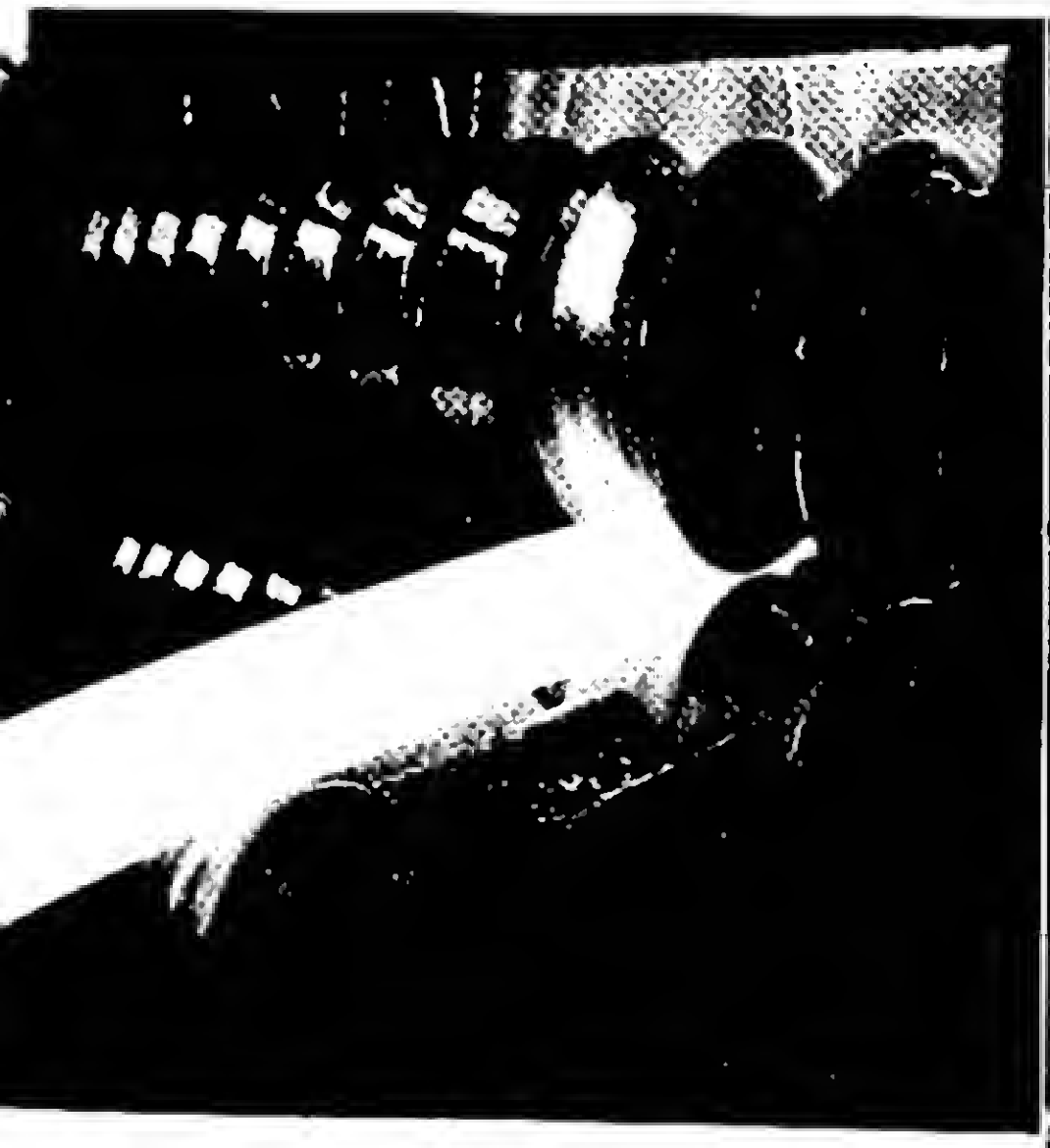
In central Sweden, however, along with the production of high grade steel a lively manufacture of merchant steel has developed, particularly in recent years. It is based on phosphorous ores from the central mining belt and imported fuel. A large part of this production consists of Thomas steel refined in electric furnaces.

The problem of producing iron directly from the ore —the ancient method—has come up anew, and extensive research has been done in this field. Since 1911 a product with a low carbon content, called sponge-iron, has been produced at Höganäs in southern Sweden. It has become rather widely used together with pig iron as a raw material for different methods of steel manufacture. In recent years a new method, invented by Martin Wiberg, has been developed for large scale sponge production, and one Swedish steel mill uses sponge iron entirely for its steel manufacture.

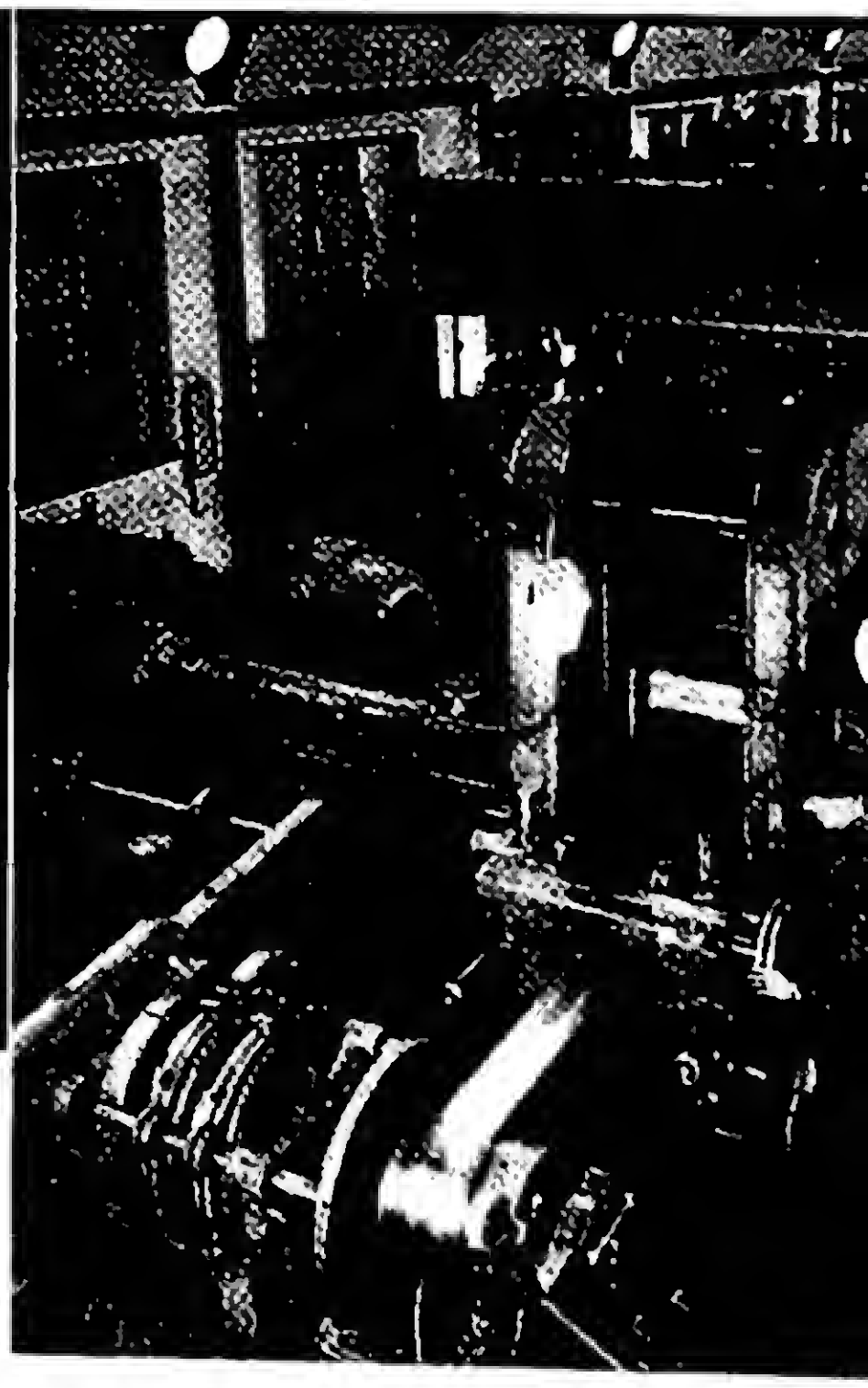
Swedish steel mills began at any early date to produce still more specialized and refined products. Many plants

have their own cold rolling mills, tube drawing and wire drawing mills, saw blade factories, or other manufacturing divisions turning out high grade products. The hot rolling mills have undergone extensive modernizations, permitting the steel to be rolled with an extraordinary precision, and the rolled steel can now meet the highest demands for high finish. Stainless steel and other high alloy steels are produced in great volumes, for export as well as for domestic use. Electric furnaces, making possible exact temperature control, are used almost exclusively for the heat treatment of the steel.

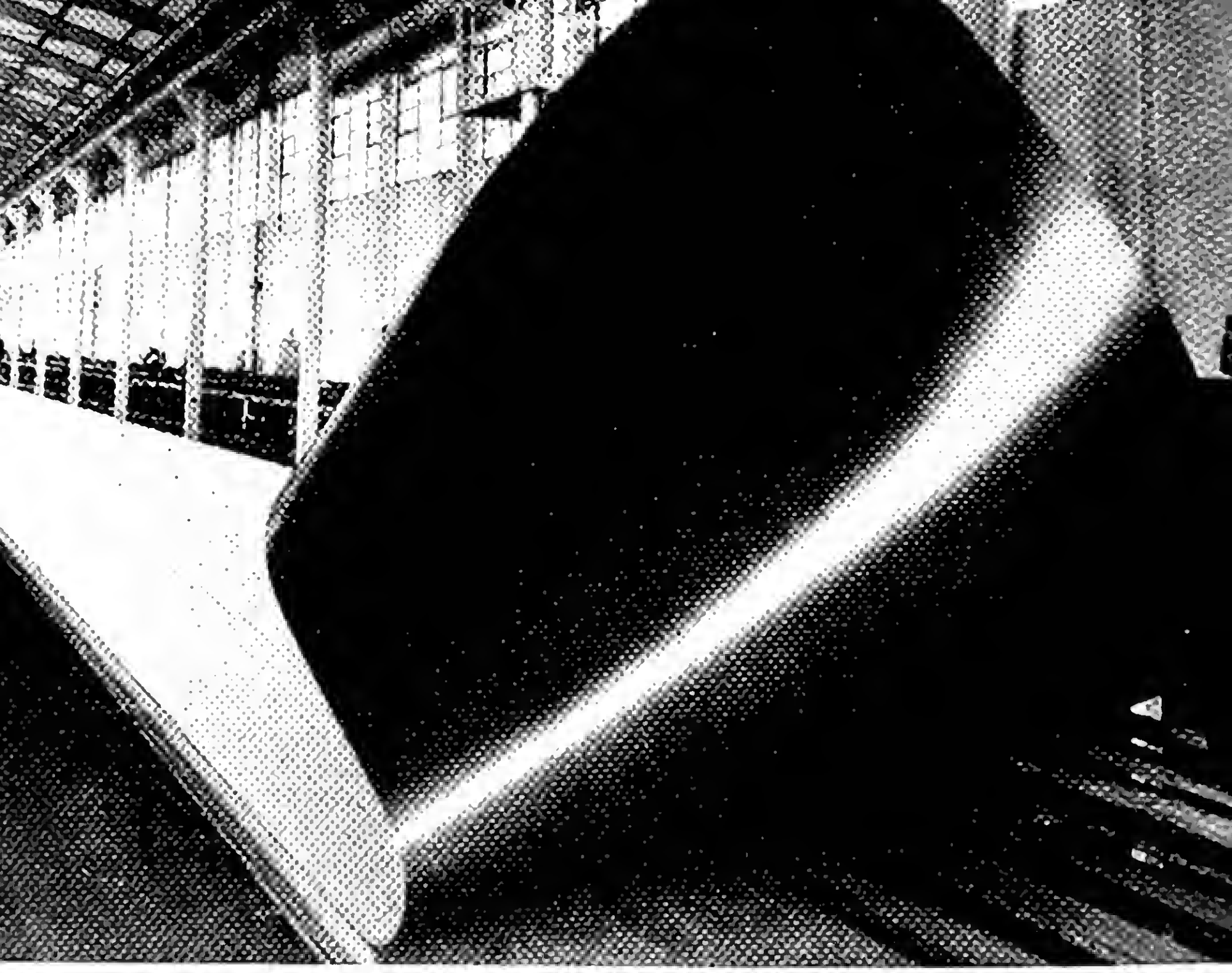
All the larger plants have their own laboratories. At the turn of the century Johan Brinell discovered the



A rolling mill for bars.



A modern cold rolling mill for 18 inch strip steel.



A conveyor belt 13 feet wide made of cold rolled strip steel.

"Brinell test", the ball testing method used throughout the world to determine the hardness of steel, and since then the development work has continued. Intensive research for the purpose of raising the quality of the Swedish steel products goes on in the laboratories of the mills and of the universities.

A characteristic feature of the Swedish steel industry is the close cooperation between the different mills. They are united in the Swedish Iron Masters Association (Jernkontoret), established close to 200 years ago for the purpose of promoting the common interests of the industry and to further its economic and technical development.

The straightening of saw-blades is done by hand by highly skilled workmen.

High grade Swedish steel is exported to the entire world in a more or less manufactured form. It is primarily used where the demands for quality are exceptionally high, such as for watch springs, ball bearings, rock drills, airplane parts, die steel, valve springs for gasoline motors, in fact wherever a homogeneous and pure material is needed to resist the wear and tear of the part.

A few representative analyses of raw materials and products of the Swedish Steel Industry, showing their excellent pureness, are tabulated below:

Iron ores:	*Iron* %	*Manganese* %	*Sulphur* %	*Phosphorus* %
Dannemora	55,8	1,5	0,020	0,002
Persberg	53,3	0,1	0,020	0,003
Bispberg	64,0	0,2	0,010	0,004

Charcoal pig iron:	*Carbon* %	*Manganese* %	*Silicon* %	*Sulphur* %	*Phosphorus* %
For Bessemer.....	4,3	3,3	1,4	0,005	0,022
» Acid Open Hearth..	4,2	0,8	1,0	0,008	0,021
Steel and Wrought Iron:					
Bessemer Steel.....	0,7	0,25	0,04	0,005	0,024
Acid Open Hearth Steel	1,0	0,4	0,22	0,007	0,021
Wrought Iron	0,04	0,1	0,02	0,005	0,010

Beside the steel mills Sweden also has a highly developed engineering industry, many prodnets of which have won world acclaim. Cream separators, ball bearings, tractors, and automobiles of Swedish make have earned a good reputation in the world market. Knives, scissors, and surgical instruments of Swedish steel have long been considered as unexcelled.

This booklet has been written for the occasion of the New York World's Fair 1939, which intends to picture the "World of To-morrow". The exposition is an ingenions attempt to reveal the future on the basis of the historical background of the present technological development, and it is a challenge to formulate the aims and hopes for the future. What does to-morrow hold in store for the Swedish steel industry? One thing is certain: the efforts of Swedish steelmen are continually directed towards improving the quality of their products, towards building further on the basis of their traditions, and finding new ways and new means of realizing this goal by scientific research. Professor Bo Kalling, one of the foremost Swedish metallurgists, has formulated the slogan for the Swedish steel exhibit as "Unsurpassed steel quality the result of pure raw material, centuries of experience, highly skilled labor, and scientific research". This slogan is as good as any for the guidance and inspiration of Swedish steelmen.

AN OUTLINE OF SWEDISH RETAIL DISTRIBUTION

by

Gerhard Törnqvist

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An Outline of Swedish Retail Distribution

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Before entering on an account of Swedish retailing for American readers it should be pointed out that in respect to population Sweden is one of the smallest nations in Europe. In area as well as in the number of inhabitants the country is merely one-twentieth as large as the U.S.A. Although Sweden has a wealth of natural resources, primarily timber, iron, and water power—all of them highly valuable—the smallness of the country restricts the possibilities of an unlimited economic expansion, a condition further accentuated by the artificial hindrances to international commerce characterizing the past decades.

Moreover, in order to understand the present situation it should also be recalled that the industrial revolution with the ensuing expansion of business came relatively late in Sweden. This may best be illustrated by a few figures. As late as 1870 more than 70 per cent of the Swedish population was engaged in agriculture and auxiliary occupations, and the economic life of the nation was, on the whole, not much different from what

it had been for centuries. Since then, however, tremendous changes have taken place. The primary industries, the production of consumer goods, and handicraft have forged ahead, and, from the point of view of employment, even surpassed agriculture. Speaking demographically, the industrialization has passed its expansion era, and the continuously rising industrial production has now reached a stage when future growth is possible only by means of the mechanization and rationalization of industry. Business and communications, on the other hand, being less adaptable to mechanization, still continue to attract an increasing share of the population because of their ever-widening scope and the constant specialization of industry. Although the industrial revolution is by no means completed, the expansion of industry is no longer reflected in increased employment possibilities. In commerce and transportation, however, it may be assumed that the demand for new personnel will continue for at least two more decades. It is primarily agriculture that is expected to deliver the man power necessary for the growth of business and transportation, although the farming population has diminished both relatively and absolutely. Despite this, however, Swedish agriculture has been capable of supplying the country with an increasing part of its food supply, at least since the war.

The differences in the economic life of Sweden and the U.S. may be expressed very simply as follows: In 1930 the relative proportion of the productively em-

ployed in industry was about the same in the two countries. In agriculture, however, Sweden employed, relatively speaking, 10 per cent more than the U.S., while in commerce and transportation the relative number was that much less for Sweden. But there are good reasons to believe that this difference will be smoothed out to a large degree in the near future.

Swedish Retailing

While annual statistics have been published for many years covering foreign commerce, industrial production, etc., very little has been known statistically about the domestic distribution. In 1931, a business census was taken—at about the same time as the first American census of distribution—which for the first time gave authoritative information about the business enterprises (or more correctly the business premises, such as stores, store rooms, offices) their personnel, and turnover. This census is in many respects less detailed than the American, and certain differences in the division of business sometimes cause a comparison of the conditions in the two countries to be rather unreliable. Nevertheless, in the field of retailing the differences are not too pronounced to preclude a direct comparison, if the number of stores and their personnel are used. The turnover figures are for various reasons less suitable for comparison, and wherever such figures are given it is with the explicit warning not to draw too far-reaching conclusions therefrom.

The comparison has been made easier by making it against the background of the ratio 1:20, which, as previously mentioned, is the relation of Sweden to the U.S., in population as well as in area. If, for instance, it is stated that a certain type of retailing establishment is characterized by the ratio 1:7, it means that this type of store is, relatively speaking, three times as common in Sweden as in the U.S., while the ratio 1:130 for a different kind of retail outlet means that it is six to seven times as infrequent in Sweden.

Scope of retailing and principal branches

The business census gave somewhat more than 55,000 retail outlets, with a personnel, inclusive of owners and managers, of approximately 140,000 persons. However, to obtain a basis for a comparison with the American figures for 1930, restaurants and certain retail establishments combined with handicraft should be added to these figures. These additions are somewhat approximate, but the rough totals would be about as follows:

	Number of stores	%	Total personnel	%	Turnover in million kronor	%
Food stores	22,111	28.5	62.993	24	1,196.6	27
General stores	15,596	20	33.757	13	868.3	20
Department stores, variety stores, mail order houses	417	0.5	6,287	2.5	107.8	2.5
Restaurants, cafes	8,800	11.5	49,035	18.5	319.6	7.5
Clothing stores	11,016	14.5	41,261	16	658.7	15
House furnishing stores	1,681	2	5,075	2	91.7	2
All other retailing	18,008	23	63,403	24	1,130.8	26
Total	77,629	100	261,811	100	4,373.5	100

(It should be remarked that the line of demarcation between house furnishings and "all other retailing" is relatively uncertain.)

The ratios between Sweden and the U.S. of the different types of stores and their personnel are given in the following table. As the sale of clothing and house furnishings may be considered to be the mainstay of the turnover of the group "department stores" etc. the ratio for these three groups has been lumped. A common ratio has also been calculated for the food stores and general stores, the turnover of the latter being largely in food. It should be pointed out, however, that among the Swedish general stores there are some (though not a predominant number) which would probably be considered department stores in the American classification:

	Number of stores		Personnel	
Food stores	1:22		1:19	
General stores	1:7	1:16	1:8	1:15
Restaurants, etc.		1:15		1:13
Department stores, etc.	1:130		1:140	
Clothing stores	1:10		1:12	
House furnishing stores	1:35	1:17	1:64	1:32
All other retailing		1:33		1:35
Total		1:20		1:23

From the above comparison it becomes apparent that the number of stores in Sweden is on a par with the number in the U.S. (1:20), while the personnel engaged in the stores is slightly less. It may also be observed that Swedish food retailing appears to be more ex-

tensive due to the relatively larger number of general stores, whereas more specialized retailing is, on the whole, less well represented. This may be partly associated with the fact that a considerably smaller proportion of the Swedish population is resident in urban centers than is the case in the U.S. If by "urban" is meant incorporated towns with a population of more than 2,500 people, the percentages for Sweden and the U.S. were in 1930 about 40 and 55 respectively. It is perhaps a mere coincidence that the difference, or 15 per cent, happens to be almost exactly equal to the population resident in the ten largest American metropolitan centers (New York, Chicago, Philadelphia, Detroit, Los Angeles, Cleveland, St. Louis, Baltimore, Boston, and Pittsburgh) all with a population greater than Stockholm, the largest city in Sweden. At any rate, the existence of these large cities must at least to some extent explain the relatively great preponderance of other forms of retailing than food and general stores in the U.S. This also seems to be confirmed by a study of the structure of retailing in the larger American centers. However, without a doubt just as important is the circumstance that Swedish retailing has not partaken to the same degree as the American in the transformation which followed as a result of the changes in production and transport, particularly after the war.

Unfortunately, it is impossible to illustrate the speed of this transformation by figures, because the 1931 census of distribution has been the only one made thus

far. For further information on this score it is necessary to await the business census of 1941. It should be remarked that the changes spoken of do not entirely refer to such phenomena as the growth of consumer cooperation and corporate and voluntary chains, but perhaps to a larger degree to the influence on the specialization of retailing caused by the progressive changes in the economic and social structure of society. Such changes are, for instance, the continuous increase of the per capita income, particularly for the lower income brackets, the growing importance of the cities as business centers (by migration to the cities and the increased mobility of the people due to the motor traffic) and, finally, the rising importance of the market economy due partly to the specialization of agriculture and partly to the greater employment of women in business and industry.

General stores still play an inportant role

The general store is a form of distribution which in Sweden still retains a much larger relative importance than in the U.S. Disregarding the ten largest cities in America, which may be justified in this case, the par for the general stores becomes 1:17 instead of 1:20, but even so, the ratio 1:7 for the Swedish general stores appears to be exceptionally high. It is quite probable, however, that the 1941 census will show that a progressive differentiation of the general stores has already set in. Some will become outright food stores, and others

will deal with agricultural supplies or house furnishings, etc. This will be the case at least in the more densely settled parts of the country, while in the remote forest regions the general store will continue to play its important role for quite some time to come.

No accurate information exists in respect to the kind of merchandise carried by the general stores, which in sufficient detail takes into consideration the great variations in the different parts of the country, making it possible to present any reliable mean figures. According to some estimates it would seem as if at least 60 per cent of the turnover is in food, about 10 per cent in clothing, and another 10 per cent in house furnishings and hardware, while the remainder may be assumed to consist largely of farm supplies.

The standard of these stores differs widely in Sweden, as is the case also in the U.S. In the sparsely settled parts of the country it frequently happens that the general store is run in conjunction with some other activity, such as farming or handicraft. The extremely low turnover of these stores points to a minor business capacity on the part of the proprietors. On the other hand, there exists among the general stores thriving business enterprises which have displayed a good ability to accomodate themselves to the changing conditions, technically as well as economically. There are, in particular, twe recent developments—quite different in character—which have affected the general stores.

Of these should be mentioned first the progressive

collectivization of retailing in the form of chains of varying character, which in Sweden appears to have affected the general store to a relatively great degree, at least in comparison with the U.S. The reason for this is quite apparent. In the U.S. large corporations took the initiative of forming the chains, and in view of the extensive urban markets and the relative ease with which the organizations could be built up and maintained in the cities, it was only natural that the corporate chains should direct their attention to this more profitable market. In Sweden, however, the background is rather different. Here, voluntary chains and buying groups had developed at an early stage, largely on the basis of already existent and geographically widely distributed stores. Such, for instance, was the case of the consumer cooperative movement, which from the viewpoint of organization has the character of a voluntary chain with the Cooperative Union as its nucleus. Its affiliations consist of local chains in larger towns, and in smaller places individual stores which, however, in recent years have been rapidly incorporated into regional chains. This is also true of a number of retailer cooperatives, of which at least one (built up around the Hakon Corporation in Västerås) has the character of a general store organization. Moreover, this latter chain has begun to cooperate intimately with other more recently established chains in other parts of the country, and is coming to be the nucleus of a nation-wide organization.

The other factor of major importance for the transformation of the old general store is strangely enough the rapidly growing motorization. The automobile has no doubt lessened the chances of the general store to compete with the city store in the sale of clothing, house furnishings, etc. But the sale of food has increased at the same time, due to the diminished self-sufficiency of the farmer households, especially in respect to such perishable foods as meat and fruit. This undoubtedly means a change in the structure of the business, but there does not appear to be any great danger of a continuous decline in the turnover of the small retail outlets in the rural areas. Of more decisive importance for the small stores is, then, how they will be able to meet the rapidly growing competition of the ambulating retailing of food, for which there does not exist any reliable figures as yet.

Specialized food retailing has many similarities to the American

A characteristic feature of food retailing (as well as of the general stores) both in Sweden and the U.S. is the fact that the size of the stores is just about the same in smaller and larger towns. The same is true to a certain extent of other branches of retailing, especially among stores dealing in daily consumption articles. But among many of the other branches there exists a definite connection between the size of the locality and the size of the store. For instance, the American census

of 1930 gives the following figures for the average personnel per store:

	Total branches	Food	General Stores	All other retailing
Cities with over 30,000 inhab. ...	5.0	2.6	3.1	6.5
Cities with 10—30,000 inhab.	4.3	2.8	3.0	5.0
Cities with less than 10,000 inhab.	2.7	2.2	2.5	3.0
Total for the country	3.9	2.5	2.5	4.8

In Sweden the case is exactly the same:

	Total branches	Food	General Stores	All other retailing
Cities with over 20,000 inhab. ...	4.2	2.7	3.3	6.8
Cities with about 8—20,000 inhab.	3.9	3.0	3.7	4.5
Cities with about 5—8,000 inhab....	3.8	3.3	3.6	4.2
Cities with less than 5,000 inhab.	2.5	2.5	2.1	2.6
Total for the country	2.6	2.6	2.2	4.4

When studying the figures for the food stores it should be recalled that this predominating group of retailing consists of many sub-groups, inherently different from each other, of which none deviates to any major extent from the average size of the whole group. A continuous development of the motor traffic, in which field Sweden seems to have been lagging behind the U.S. by about 15 to 20 years since 1920, may at least in the largest centers give rise to the type of food markets which have appeared on the American scene in the past decade. As yet, however, there is no evidence of

such markets, and hardly any instances of food retailing with limited customer service.

Large scale retailing of food

On the other hand, large scale retailing of food in the form of chains has, as previously mentioned, had a relatively strong growth. To state exactly the scope of these chains is extremely difficult, but certain fixed points exist for estimating their importance.

The most detailed figures available are those referring to the consumer cooperative movement. This is not, as sometimes imagined, the loosely organized cooperation of a number of families for common purchasing. The ownership is organized as economic societies, but these carry on their distribution as real business enterprises. Some of them are small, with only one or a few stores, but a great number do a real chain store business. The largest is the Stockholm Cooperative Society with over 400 stores, but there also exist several other cooperatives of considerable size. The total number of consumer cooperative sales outlets was in 1937 about 4,600 owned by 671 societies. It should be mentioned that while the number of stores is continuously increasing, the societies have declined considerably in the course of the years, due to their consolidation into regional bodies. The total turnover of the societies was in 1937 close to 500 million kronor.

The consolidation of small societies into larger units has without doubt been of great importance for the

competitive strength of consumer cooperation. Of still greater significance is the Cooperative Union (Kooperativa förbundet, or KF) owned by the societies themselves, and serving as a connecting link and central administrative organ for the entire movement. It may therefore be considered as the nucleus of the voluntary chains. This central organization possesses an especial importance in its character of central purchasing agent for the various societies. The relation between the purchases of the societies from KF and their total sales, after the amounts have been re-calculated to the same value, is about 50 per cent. It should be added, however, that a great deal of merchandise (for instance, fresh bread and packed meats) can be made locally to better advantage by the large urban societies. The same is also true of perishables bought locally by the smaller societies. The purchase of such merchandise cannot be advantageously handled by the central organ. The success of the Swedish consumer cooperation must be ascribed chiefly to the far-sighted and exceptionally capable management of the Cooperative Union and the larger societies. By taking the initiative to a great many important steps in respect to the planning and organization of the stores, personnel training, merchandise control, propaganda, etc., it has gained the authority that is absolutely essential for the maintenance of the efficiency and competitive strength of centrally managed retail chains. The personal leadership, and the business organization built up on the basis thereof, are,

according to the writer—although this opinion is not universally accepted—of considerably greater importance than the circumstance that this is a matter of cooperation between consumers, instead of private capitalistic corporations or cooperation between such.

The turnover of the Cooperative Union in 1937 was 217 million kronor and in 1938, 230 million. But neither these figures nor the aggregate figure for the consumer cooperatives given above supply a reliable basis for judging the part played by cooperation in the total retail business of the nation, because in the total turnover is included food products, where the part played by the cooperatives is considerable, as well as other merchandise, where its part is negligible. On the other hand, it is quite easy to determine its share in respect to certain definite food products. The share of the cooperatives in the total distribution of, for instance, sugar, flour, and oatmeal was about 20 per cent, margarine 25 per cent, coffee 18 per cent, tea 15 per cent, green soap 15—20 per cent, fresh and dried fruit 18 per cent, etc. The share of the business in perishables is impossible to determine exactly, but it is quite probable that it approaches 20 per cent.

Naturally, such merchandise as clothing, glass, chinaware, shoes, and tobacco are also sold to some extent in cooperative sales outlets of a more general store character. The city societies have special stores for clothing and shoes. As far as it is possible to estimate, the cooperate share of the total sales of the country

of such merchandise lies as a rule somewhere between 5 and 10 per cent.

It has previously been mentioned that besides consumer cooperation there exists in the grocery and general trade a number of important retail buying groups. Foremost among these is A. B. Hakon Swensson (the Hakon Corporation) in Västerås, with a turnover of roughly 45 million kronor in 1938. Its customers are concentrated to grocers and general stores in the southern and central parts of Sweden. A similar organization is "Essve" in Stockholm with customers among the city grocers. Its annual turnover is only half that of the Hakon Corporation. In recent years a couple of similar enterprises have been started in the northern and southwestern sections of the country. It appears as if a rather intimate cooperation between the above-mentioned companies in respect to common purchasing is being developed. Besides those mentioned, there are several other wholesalers who work towards a closer relationship between wholesaling and retailing. It is too early to state whether this will result in a real concentration of purchases, with an ensuing reduction of storage and transport costs, and an intimate collective effort for increasing the efficiency of merchandising and store service.

The *producer cooperatives* have also taken the initiative towards creating large scale business enterprises in the retailing of food. This is especially the case with the distribution of milk in the larger cities, and the

retailing of meat and meat products, particularly in the densely populated southern part of the country. However, the tendencies to such an integration appear to have come to an end, after the agreement concluded between, on the one hand, retailers (as represented by the Swedish Independent Grocer's Alliance and K.F.) and, on the other hand, the farmer producer organizations, not to encroach further on each other's territories. In respect to merchandise turned out by relatively small producers and then assembled and distributed by larger organs in order to finally reach the public through small retail outlets, it may be assumed that both parties consider such an agreement satisfactory. However, in respect to industrial products proper the situation is without doubt quite different. It may be mentioned in this connection that the Cooperative Union carries on an extensive production of its own of staples (flour, oatmeal, hard bread, and through the local societies fresh bread) and even other kinds of merchandise (for instance, chinaware, shoes, rubber goods, rayon, cash registers, and—for an international organization—electric bulbs).

Corporate chain stores, in the proper sense of the term, are not found very often in the food business. With some exceptions they would probably not have been included as real chain stores in the American census of distribution.

In conclusion it may be said that roughly 30 per cent of the Swedish distribution of food supplies is handled

by chains, corporate as well as voluntary. It is quite probable that this figure will increase substantially. In predicting in which type of chain the immediate growth is to be expected, it deserves mention that the expansion during the past five years of the consumer cooperation and the above-mentioned voluntary chains has been relatively about the same. The rise of new voluntary chains will probably cut down the proportion of consumer cooperation in the field of food retailing. However, it seems hardly possible that the latter will have to give up its position as Sweden's largest individual food retailer for an appreciable time to come.

Other large scale retailing

The ratios given in table 1 indicate the existence of but a small number of department stores, variety stores, mail order firms and similar enterprises in Sweden. But this situation is compensated by the far greater number of clothing stores in this country. This may be partly due to the fact that Sweden is lacking in metropolitan centers, and partly to a somewhat different basis of classification. (It may be mentioned in this context that more than 40 per cent of the turnover of department stores and mail order firms in the U.S. is in the ten cities listed above.) Nevertheless, the figures undoubtedly reflect the actual situation which, particularly in respect to the department stores nowadays considered as an established form of distribution, is hard to explain. The variety stores have had

their principal growth in Sweden during the 'thirties, and in this field of retailing something resembling a balance has without a doubt already been reached. These stores have accounted for an increase in turnover of at least 55 to 60 million kronor annually since 1931. Although some of this has been taken away from department stores and mail order houses, and other more bazaar-type stores within this group, it may be assumed that both turnover and personnel within the entire "general" group have increased by at least 50 per cent during this decade. At the same time it may be estimated that the total retail business turnover of the period has increased by 10 per cent, which corresponds to the increase of the national income.

Although this general group is very heterogeneous, and in the U.S., for instance, is comprised of a large number of small dry goods stores with slight turnover as well as large department stores, it may be regarded as containing all the types of retail outlets which palpably deviate from the normal type of stores. Considered as establishments, all other retailing enterprises are without exception small. When speaking of large scale business in this connection, it should not be understood as meaning large stores, but rather a great number of stores which together form large firms or affiliated groups. In the following we shall discuss some of these organizations in other fields than the general stores and food stores previously mentioned.

The Swedish conditions for chains are exactly the same

as those in the U.S. The advantages of a chain organization are realized when a central organ for storing and purchasing can handle the wholesaling end more cheaply and efficiently than an independent wholesaler. A chain business is also profitable when the merchandise carried by a number of stores coincides to such a high degree with the output of a single factory, that a manufacturer by establishing his own stores will benefit by the advantages of a better knowledge of the demand, and the reduced costs of advertising and sales promotion. A good instance of chains formed because of the latter considerations is the sale of gasoline and shoes. The gasoline chains are quite extensive in Sweden, but no detailed figures are available either from the business census or from other sources. A large part of the shoe business is done by the Oscaria Shoe Company in Örebro, which owns more than 250 stores in different parts of the country, with a total annual turnover of 16 to 17 million kronor. Besides its own stores, this company also sells through independents which have been formed into a kind of voluntary chain. It has been estimated that the company through its own chain handles at least 15 per cent of the total turnover of shoes in the country. The cooperatives, which also possess shoe factories, retailed considerably more than 10 million kronor's worth of shoes in 1937, of which the major portion was sold in special cooperative shoe stores. There also exist other chain-like organizations in the shoe trade as well as some local chains.

Among the chains based on the distribution channel "wholesaler-retailer", the indisputable leaders are—as previously mentioned—the food and general stores. In paints and toilet articles there are some chains in the largest towns, but none of them can in any way compare with the corresponding American organizations. In the tobacco business there are no chains at all, undoubtedly due to the policies of the Government monopoly which carries on the manufacture of tobacco, but only in some few instances retails its products. The liquor monopoly, however, sells through licensed local companies which in many cases have established local chains. Several of these companies run a restaurant business through subsidiary organs. As there are also other restaurant chains, this field may be considered as relatively highly chained. For the sale of newspapers, magazines—sometimes even candy and tobacco—there exists an important chain which controls the nation-wide news-stand distribution of about three-quarters of all newspapers and periodicals. By agreement with the State Railroads the company has a monopoly on the sale of newspapers on trains and railroad stations.

Among the variety stores the chain building has been considerable since 1930. Two large corporations have been formed with a total of 25 stores and an annual turnover of at least 55 million kronor. A couple of similar smaller chains have probably a total turnover of 7 or 8 million kronor. Although it is difficult to draw a line between variety stores and other dry goods

stores, it would hardly be an exaggeration to state that the Swedish variety stores—like the American—are practically 100 per cent chained.

Final remarks on large scale retailing

As a final conclusion in respect to the formation of chains it may be said that although they have not obtained the same scope as the American, the difference is hardly greater than that occasioned by the previously mentioned time lag in the general development of distribution. As in the U.S., the expansion has been the greatest in the field of staples designed for general consumption, while fashion merchandise has resisted the general tendency towards chains.

The outstanding difference in the development in Sweden and the U.S. is found in the retailing of food. In Sweden voluntary chains, including consumer cooperation, have been leading, while in the U.S. the corporate chains were the pioneers. A certain compensation seems to have set in in this respect. To increase the competitive strength the voluntary chains have been forced to demand an increased willingness on the part of the members to subordinate themselves to a central management. On the other hand, it appears as if the corporate chains are tending to leave a certain measure of initiative to their store managers, at the same time making them directly economically interested in the success of their stores. But this reflection is based chiefly on the Amer-

ican tendencies in this field. It is quite possible that this development may continue to a point where the voluntary and corporate chains may be considered to be similar. However, it is also possible that the future will show that the desire of formally independent store owners to subject themselves to a voluntary chain, thereby losing their character as independents, will vary greatly according to the character of the merchandise and the associated buying problems. In respect to food, the possibility for a store owner to increase his turnover by keeping a more individual stock is without a doubt so small nowadays, that he subjects himself without struggle to the restricted range of freedom resulting from the complete submission to a voluntary chain. Under such circumstances it is quite probable that a voluntary chain becomes practically equal to a corporate chain in regard to its buying efficiency, while the individual interest in ownership or management makes it superior to the corporate chain in many respects. On the other hand, in branches where the merchandise has not the character of staples, i.e. where it is style merchandise, but not sufficiently so as to preclude chain formation altogether, it is very likely that the most economical alternative to independent retailing is the corporate chain. If this opinion is correct—and no definite claims are made for it—then the development of large scale retailing in Sweden is following lines which may, on the whole, be considered to be economically sound.

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